The Theory and Practice of Rolling Steel

By Wilhelm Tafel

Translated from the German by Richard Rimbach

Chapter II—Continued

WHEN considering problems of rolling and pressing, the occurrences when castings cool, or, warpage resulting from hardening or tempering, the influence of adjacent parts which expand or contract unequally when not associated with one another is important. With a pressed body of the height *H*, in Fig. 32, the outer parts are compressed. The material then would fill the cross-section 1, 2, 3, 4 if no resistance were offered to the displacement of the particles, in other words if it were fluid. The larger the resistance, the less the material will climb into the hollow pass. In reality there is no prevention for climbing but the part pressed down pulls down the non-pressed middle part, the two parts being connected in the bearing surfaces. This is shown in the elevation by 1, 2, 3, and 4 and in the ground planes a, b, c, and d. Furthermore, in the heat treatment of shafts, it frequently happens that they are bent slightly, particularly when the heating does not proceed uniformly on all sides from the beginning. After cooling off to the room temperature all parts are again at the same temperature, so they must have the same length at the end. The parts which first bent must straighten out again provided that in the whole period of heating and cooling the influence of the neighboring parts was the same. This is not the case.

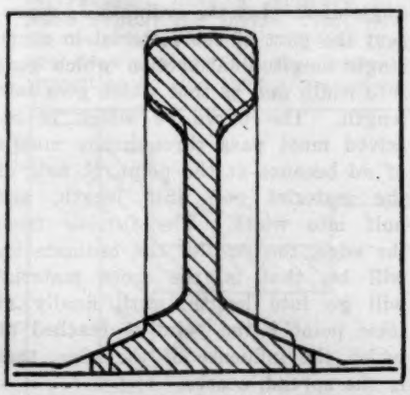


FIG. 28—SPREAD ACTION IN THE FOOT OF A RAIL

The procedure in a cylindrical body, divided into two equal parts by a plane through the axis, of which one side gets heat and the other little or no heat, is as follows: The former, which is designated as the lengthening half, attempts to pull along the latter or the still half. The supposition is that:

1. The still half is plastic and offers no resistance to the flow. It will assume the same length which the one that is heated higher assumes due to the rise in temperature.

2. The still half resists being carried

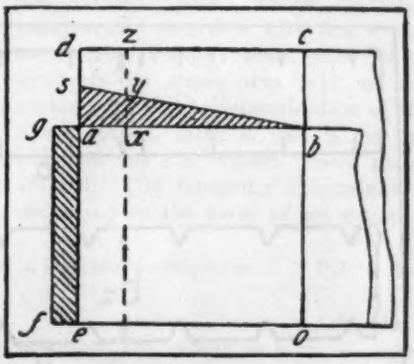


FIG. 29—SPREADING ACTION OF OUTSIDE SECTION

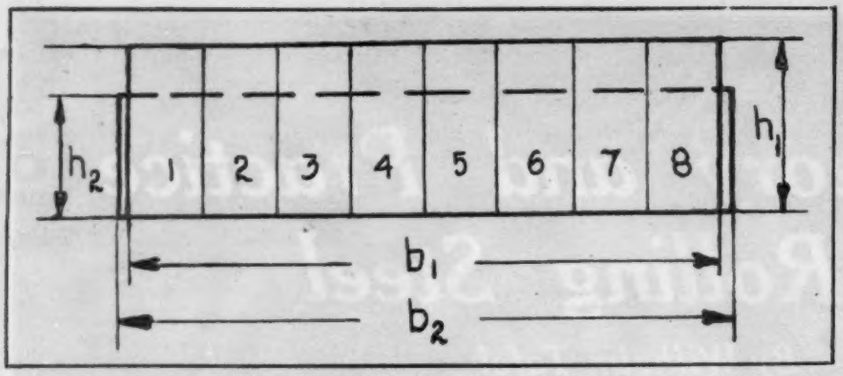


FIG. 30—INDIVIDUAL PARTS OF A PASS TAKING PART IN THE SPREADING ACTION

along by the other half. In this case the latter will be restarted or upset as it were, on the other side and the resistance will be converted in part into deformation work in the direction of bending. This is shown in Fig. 36. The material will curve with the side on which it rests toward the center of a curve.

A shaft for example which is heated by the hot gases from the roof of an annealing furnace, assumes at first a higher temperature on top than on bottom and a curling in the direction shown by Fig. 36 occurs. The upper half reaches the temperature of the hot gases, about 800 degrees Cent. and is more plastic. The latter side of the cylinder takes on this temperature slowly. In this period the lengthening lower half will pull along the plastic upper half, lengthening it. A bending back will not take place and some of the first warping will remain after cooling, even though all cross-section parts again possess the same temperature.

A material, subjected to a heavy draft, but which is held back by the neighboring parts, will have the tendency to let the superfluous material go into breadth rather than length. Giving the head of a tee less draft in the second pass as shown in Fig. 34 is good practice in the development of the web to the breadth. The material in these passes as a rule still is hot and plastic. The head given less draft than the web will undergo less shrinkage. Moreover some of the material of the web will flow into the head, another part will go into breadth. Such profiles therefore show an abnormally large spread.

A similar condition exists in the edging profile of a rail pass design. Due to the low resistance of the web to buckling, the diminishing in height of the whole profile shown in Fig. 28 only can be about 10 per cent. If it is made about 30 per cent larger on the outer flange parts, which still are in contact with the roll the material from these cross-sections is forced to spread rather than lengthen. The abnormal spreading provides a means by which to attain development of the flange. Conclusions derived from the foregoing considerations have led to a hypothesis in regard to the spreading procedure.

If the rectangular cross-section b_1h_1 in Fig. 30 is divided into a number of equal parts, in this case eight, the first conclusion based on the fact that the spread is not proportional to the total width is that the single cross-sections do not take equal part in the spreading. If this were the case, a rod which had only half as many lamellae, could only spread half as much as that of the width b_1. In considering how the parts *1* to *8* differ we notice, that the inner sections *2* to *7* have adjacent parts on either side and the outer or edge parts *1* and *8* only on one side. Assuming part *3* receives no draft, it would be drawn along by its neighboring cross-sections *2* and *4* like a rubber band, increasing in length and decreasing in height and thickness. The draft h_1-h_2 which part *3* actually receives, is close to that received by drawing down and therefore will not meet any resistance in the longitudinal direction. In other words, as part *3* tends toward length under the influence of its neighboring parts, it will send the whole displaced material in this direction and will not spread.

A different condition maintains with the edge, the smaller the ordinate *xy* connected on the inner side with a neighboring part while on the outer side they are free. With the former, as with the other parts, all the displaced material will go into length; the latter will act as bodies uninfluenced by the neighboring parts, that is, half of the flowing metal will go into length and half into spread. In Fig. 29 part 1 *eocd* is shown enlarged. The whole of this displaced material is represented by the rectangle *abcd*. Let the ordinate *xy* represent the part of the material in every single longitudinal section which goes into width and *yz* that which goes into length. The curve *bs* which is received must pass through the middle of *ad* because at the point, *S*, half of the material goes into length, and half into width. The further from the edge, the smaller the ordinate *xy* will be, that is, the more material will go into length, until finally at some point *b* the point is reached at which the influence of the edge, that is the spread, ceases.

The distance *ab* is called the influence depth. The curve *bs* is prob-

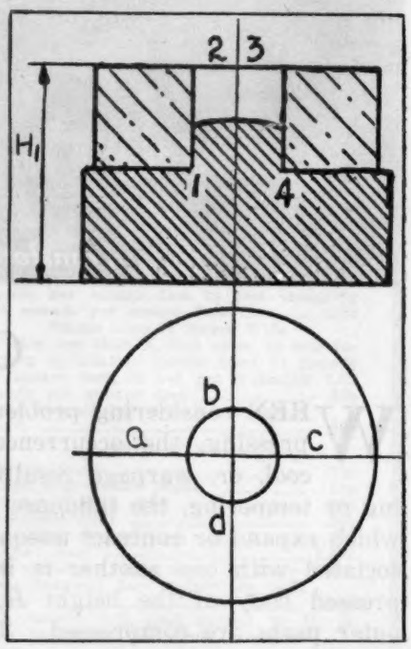


FIG. 32—INCOMPLETE FILLING WHEN PRESSING

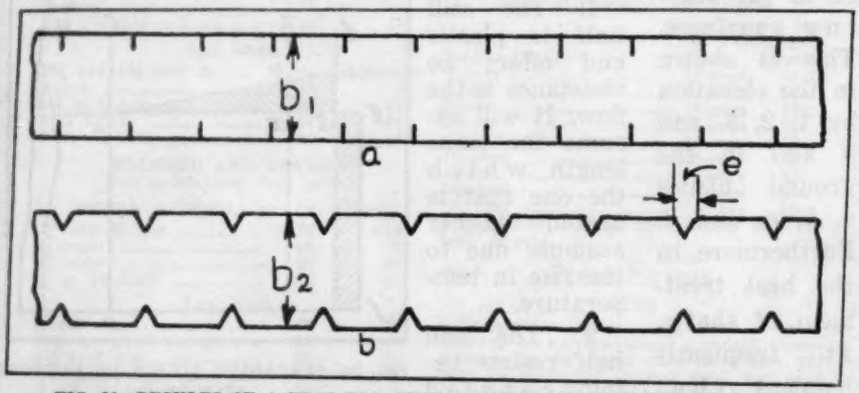


FIG. 31—RESULTS OF A TEST FOR SPREAD ON A ROD SLIT BEFORE ROLLING

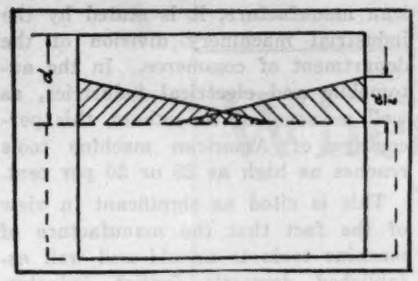


FIG. 33—OVERLAPPING OF THE STRESS TRIANGLES

ably a straight line. The triangle *abs* called the intensity triangle therefore represents the stock that goes into spread; the trapezoid *bcds* the material of the end piece; and *eocd* going into length. According to hypothesis no part of the inner cross-section goes into spread, and as the conditions at the right edge are the same as at the left, the material *feag* going into width on each side must have the same area as the intensity triangle and the total spread must equal twice its area. If the latter is known the depth of influence *ab* for the particular case can be calculated. If the depth of influence could be determined with a definite quality of material and temperature and a definite roll diameter, the spread could be calculated in advance.

Conducts Notch Tests

That the foregoing hypothesis is correct has not been proven conclusively although experiments have made it appear plausable. For example:

1. A rod Fig. 31a was nicked on two edges with a cold saw and then passed through the rolls. The draft was 50 per cent. The nicks opened forming triangular notches as shown in Fig. 31b. This proves that less material goes into length at the outside than at the inside, and of the latter the amount drawn along increases the nearer it lies to the edge. The gaping notches are vertical intensity triangles transferred into the horizontal plane.

2. If in the interior of a rod all the material goes into length and the outer part into width, the surface layers must have a tendency to remain behind the inside. But due to the two being connected, the former are drawn along by the latter. In opposition to this they offer resistance

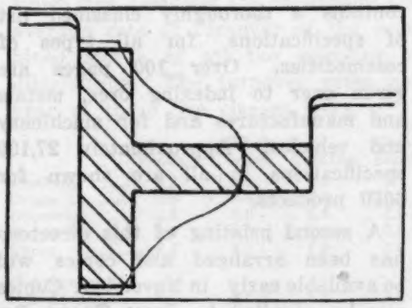


FIG. 34—SPREADING ACTION IN ROLLING A TEE

in the form of stresses, which, as far as they lie below the elastic limit, remain in the material after rolling, if they do not equalize themselves by cracking of the edges, as we observe in example 1 and also quite often with thin, cracked, so-called saw blade strip steel.

In a second experiment the author attempted to prevent the stresses by placing on each edge of a rod an area equivalent to the material going into width and equaling the intensity triangle *abs* in Fig. 37. The rod then was given a roughing pass and a pass through a pair of flat rolls. The result was that these intensity triangles were rolled wholly into the rod, without swelling out at *c* to the form shown by the broken line, or to leave a mark at *a*, as would be expected. The corners were sharp and angular as if machined. The rod no longer was straight as with a rectangular roughing pass but left the rolls bent like a flaming sword. The edges, which otherwise stress the interior of a thin rod and leave the rolls straight in spite of the unavoidable small unevenness of the roll surfaces, were without stress.

By the foregoing hypothesis, the appearance, of a narrow cross-section of flat or hoop steel 0.394 to 0.472-inch wide which suddenly shows a large spread, can be explained. The depth of influence according to the hypothesis is independent of the width. If the latter is smaller than twice the influence depth, then the points of the intensity triangle cover one another, as shown in Fig. 33, and press each other to the side. The material going into width, therefore, increases and can amount to 50 per cent.

In attempting to come closer to an understanding of the question of spread, J. Haag with the aid of the spreading experiments in the literature of Puppe, Tafel and Scheld searched for the relation of the spread to the compressing force. In laborious, mathematical investigations using the spreading formulas of Kirchberg, Scheld and Geuze and the foregoing theories on the intensity triangles, approximate proportionality finally was received, of the quotient $\frac{b}{d}$ (spread through draft) with the compressing force S, as determined graphically as $\frac{F+f}{F}$ in Fig. 27C. The proportionality is seen from the linear course of the curve in Fig. 35,

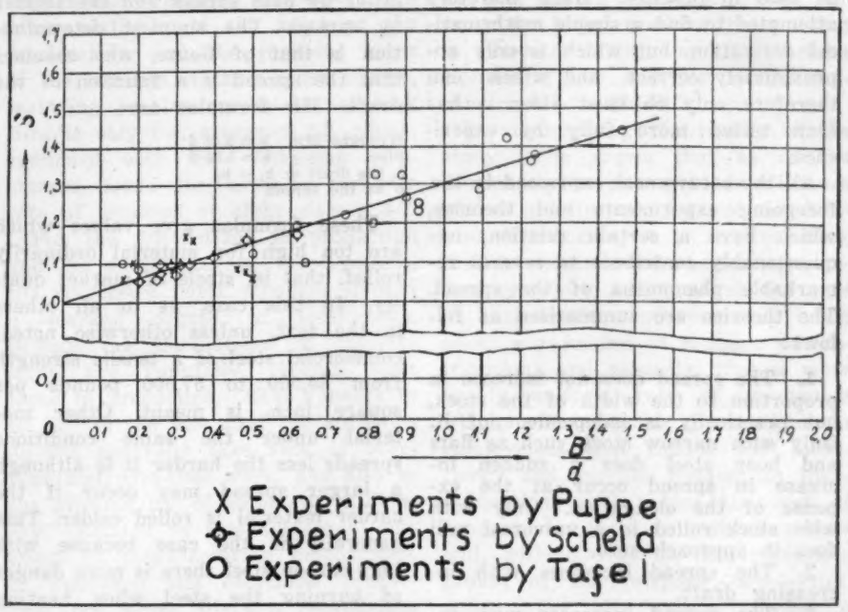


FIG. 35—CURVE SHOWING THE RELATION OF SPREAD AND UPSETTING FORCE

whose ordinates are values of S and abscissas $\frac{B}{d}$ for every point between entrance and exit.

It can be seen that the points are ground fairly evenly on either side of the straight line. Those deviating considerably originate with few exceptions from Puppe's tests, with which probably no stress was laid on not making the simple determination of the exact spread, after it was of no importance for the subject (speed gain) treated. The foregoing determination expressed in the form of an equation is, the compacting force $S = 0.3 \frac{b}{d} + 1$ therefore the spread is $b = \frac{d(S-1)}{0.3}$.

This formula differs from others in that the spread is expressed not only

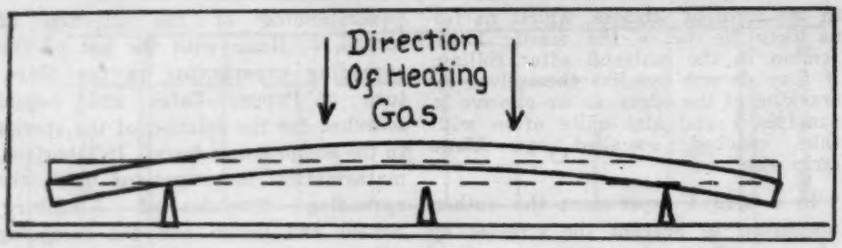


FIG. 36—CURLING ACTION OF AN ANNEALED SHAFT EXPOSED TO HOT GASES IN A ROD

in terms of the draft but also considers the compacting force S, which inncreases with the roll diameter, therefore dependent on the latter. As has already been mentioned the spread increases with the roll diameter.

The determination of the compacting force S by the graphical method demonstrated, is too combersome to be used in practice. Haag therefore attempted to find a simple mathematical derivation, but which is only approximately correct and which can therefore only be used after it has been tested more fully by experience.

All the occurrences expressed in the foregoing experiments and theories, which have a certain relation, unquestionably contribute to several remarkable phenomena of the spread. The theories are summarized as follows:

1. The spread does not increase in proportion to the width of the stock, but practically is independent of it. Only with narrow stock such as flats and hoop steel does a sudden increase in spread occur at the expense of the elongation. Only with wide stock rolled in a universal mill does it approach zero.
2. The spread increases with increasing draft.
3. The spread increases with increasing roll diameter. Large roll diameters cause considerable spread and little elongation and vice versa.
4. The spread of a single part of a cross-section can be lessened or wholly prevented, if pulled along by its adjacent parts it can be increased and the elongation wholly prevented, if it is held back by the adjacent parts.
5. Finally the spread increases with decreased rolling speed all other conditions remaining the same, especially the same roll diameter.

An accurate mathematical determination of spread has heretofore not been successful in spite of the many attempts made in this direction. By spread we usually understand the difference of the width before and after the pass, as assumed in the previous section. Very often, it is taken as the amount a pass is larger than the previous one. Both ideas do not always mean the same. We will for the sake of distinction designate the latter by pass spread and the former by spread. The simplest determination is that of Geuze, who assumes that the spread is a function of the draft. His formulas are:

Wrought iron $b = 0.48\ d$
Steel $b = 0.35\ d$
d, the draft $= h_1 - h_2$
b = the spread

These formulas give values which are too high for material ordinarily rolled, that is, steels of market quality. In this case, as in all others in the text, unless otherwise noted, commercial steel of a tensile strength from 54,000 to 57,000 pounds per square inch, is meant. Other material under the same conditions spreads less the harder it is although a larger spread may occur if the harder material is rolled colder. This generally is the case because with high-carbon steel there is more danger of burning the steel when heating than is the case with soft steel. For the foregoing formulas the following substitutes are approximate. At temperatures of 1832 degrees Fahr. and higher, b=0.25 d; for temperatures lower than 1832 degrees Fahr., b = 0.33 d.

Use Many American Tools

Some of the leading members of the machine tool trade in Great Britain point out that not less than 10 per cent of the machine tool equipment in British plants is of American manufacture, it is stated by the industrial machinery division of the department of commerce. In the automobile and electrical industries, as well as some of the others, this percentage of American machine tools reaches as high as 25 or 30 per cent.

This is cited as significant in view of the fact that the manufacture of machine tools is an old and well established domestic British industry, and as assurance that the American-built machine tools are highly regarded in Great Britain. Considering the fact that Germany and some other countries, notably France and Holland, also do an important machine tool business with Great Britain, and that until the past year the exchange feature has been in favor of German trade and against American participation, the percentage of American equipment now in use may be regarded as extremely satisfactory, the machinery division points out.

Inquiry as to what types of American machine tools meet with most success in the British market shows that special grinding machines, gear cutting machines, multiple drills, special machines for crankshafts, and lathes now are enjoying the best sales. The bulk of the sales in American metal working machinery parts are made in chucks, drills, taps, reamers and dies. These latter are sold not only for use on American machines, but, in many instances, because of their superior accuracy, are employed on machines of British, German or French origin used in British plants.

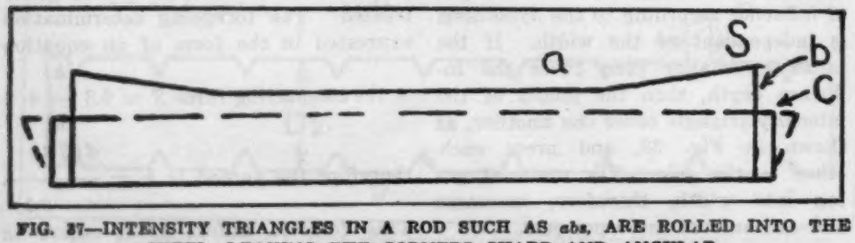


FIG. 37—INTENSITY TRIANGLES IN A ROD SUCH AS *abs*, ARE ROLLED INTO THE STEEL, LEAVING THE CORNERS SHARP AND ANGULAR

Government Prints More Copies of Directory

That the "National Directory of Commodity Specifications," first printing of which was announced by the bureau of standards of the department of commerce about Sept. 30, is in great demand is evidenced by a later bureau statement. The directory, although but a month old, is already out of print. The booklet contains a thoroughly classified list of specifications for all types of commodities. Over 100 pages are given over to indexing ores, metals and manufactures and for machinery and vehicles. Approximately 27,100 specifications in all are shown for 6650 products.

A second printing of this directory has been arranged and copies will be available early in November. Copies can be supplied by IRON TRADE REVIEW, the cost being $1.25.

Where the Consumer's Dollar Goes

Score Is 58.7 Cents for the Producer, 41.3 Cents for the Distributor—Some Facts Bearing on Cost of Distribution Revealed by Accountants' Survey

APPROXIMATELY 40 per cent of the price paid for merchandise by consumers represents the cost of distribution. This is one of the outstanding features of a survey recently completed. Specifically, the investigation encompassed 15 classes of merchandise commonly used, and shows that as an average, for every dollar expended by the consumer, 58.7 cents went to the producer and 41.3 cents to the distributor.

The averages for seven classes of merchandise, including clothing, drugs, electrical supplies, furniture, hardware, jewelry and shoes are 57.8 cents to the producer and 42.2 cents to the distributor. Broadening the range to include dairy products, fruits and vegetables, groceries and meats, the averages become 58.6 cents for the producer and 41.4 cents for the distributor. The general averages for 15 classes as already stated include, further, automobiles, coal, dental supplies and lumber. The data as developed by Niles & Niles, certified public accountants, New York, are summarized in the accompanying table.

For the rate of turnover, partial statistics were found for 22 classes of merchandise, but for only five classes were there available the turnover statistics of the producers, of the wholesalers, and of the retailers, all of which are essential for computing the average rate of turnover of the combined stocks of all the agencies of distribution. The turnover rates per year of these five classes were:

	Producer	Wholesaler	Retailer	Combined
Clothing	2.8	....	4.5	1.7
Drugs	2.3	3.6	2.3	0.9
Groceries	4.6	5.6	8.3	1.9
Hardware	2.8	3.6	2.1	0.9
Shoes	3.2	3.7	1.9	0.9
Average of 5 classes	3.1	4.1	3.8	1.3

The turnover rates of the producers of 14 other classes average 3.1, the same as the average of the five classes listed above. There were no other statistics of the rates of the wholesalers, and the turnover rates of the retailers of three other classes, including jewelry on which the stock turn is only 0.9, averaged 2.2, which, combined with the foregoing five classes, made the average turnover rate of retailers of eight classes 3.2.

For the fluctuations in production and in manufacturing employments, the respective index numbers showed a marked degree of parallelism, though the fluctuations in employment are generally shorter than those in production. This appears to be due to the fact that the statistics do not generally take note of overtime and part-time work, and also to the growing use of automatic machinery. Related to this subject of the effect on manufacturing employment of increased and decreased production, the report gives a compilation showing the cost of hiring new employes, which is reflected in the manufacturing costs of their products.

It is estimated that for foremen the cost is $1000 to $2000; for clerks $25 to $200; for skilled employes $50 to $500 and for unskilled employes $30 to $40. More specifically, the average for hiring machine tool workers is given as $150; for metal trades workers $73.50 and for skilled machanics $48 to $58.50.

In summarizing the results of the study it is shown that as to the economic principles which at all times govern or affect the cost of merchandise distribution, it is evident, first, that a reduction of the average inventory which will increase the rate of merchandise turnover will bring about a reduction of the cost of distribution; and secondly, that a more nearly uniform rate of production which will minimize fluctuations in employment and reduce the inefficiency and expense incident to these fluctuations will reduce the cost of production. Either of those results will, without reducing the respective profits of the producer, wholesaler, and retailer, give greater purchasing power to the consumer's dollar.

It is said the purchasing power of the consumer's dollar is affected not only by the cost of production, for the reduction of which inventive skill and operating experience have been employed during many years, but also by the cost of distribution which it appears may be similarly reduced by a corresponding study of the conditions in any commodity.

It is only during recent years that intensive study has been made of the costs of distribution, and the available statistics are not so full and comprehensive as they should be. While the accountants were examining the available data a national distribution conference was held in Washington under the auspices of the Chamber of Commerce of the United States, as a result of which, and with the active co-operation of Secretary Hoover and the department of commerce, half a dozen committees have been organized to study different phases of the distribution problem.

Dividing the Dollar

	Producer (cents)	Distributor (cents)
Clothing	67.5	32.5
Drugs	54.6	45.4
Electrical supplies	53.0	47.0
Furniture	56.4	43.6
Hardware	58.0	42.0
Jewelry	60.0	40.0
Shoes	55.2	44.8
Average of 7 classes	57.8	42.2
Dairy products	73.0	27.0
Fruits and vegetables	50.3	49.7
Groceries	72.9	27.1
Meats	70.8	29.2
Average of 11 classes	58.6	41.4
Automobiles	73.0	27.0
Coal	44.4	55.6
Dental supplies	73.0	27.0
Lumber	45.4	54.6
Average of 15 classes	58.7	41.3

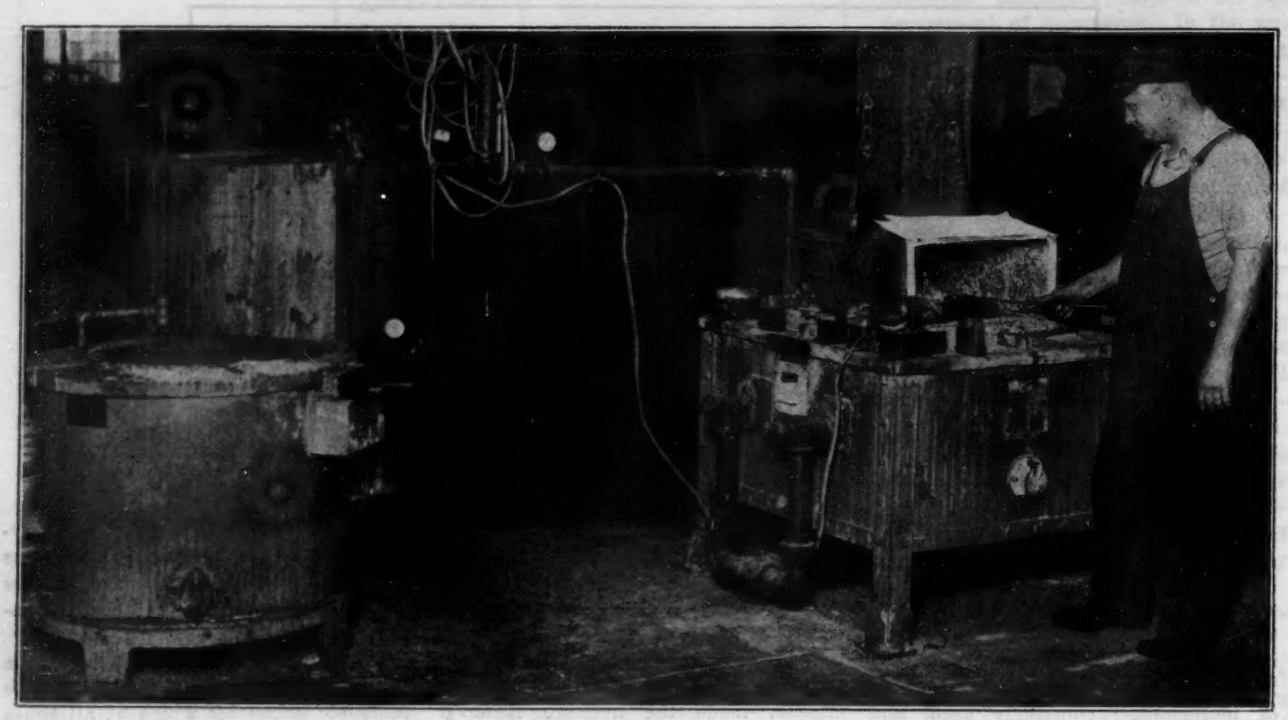


Fig. 1—At the right is a salt bath hardening furnace for special dies and at the left is a round tempering furnace. Both are for carbon steel only

Heating Steel by the Salt Bath Method

DEVELOPMENT of a liquid medium in which metals might be heated for the purpose of heat treating has occupied the attention of metallurgists for many years. Advantages of this method of heating are well recognized, consequently it is not surprising to find industry bending every effort to solve some of the difficulties which have been presented. The subject of liquid heating mediums has attracted so much attention that the American Society for Steel Treating, at its last four or five conventions, has included in its program a symposium on salt baths. The opportunity for extended discussion of this method of heat treatment has brought out much valuable information and has led to a more general acceptance of the process.

For certain precise heat treating operations, coal, coke, or other open fire heating methods, are not entirely satisfactory. The heats are uneven, dies are distorted, skilled workmen are required and results are variable and unreliable. Lead hardening is an advance over coal and forms an interesting step in the evolution of the art. In drawing a die from a lead bath, however, particles of lead sometimes adhere to the cutting edges and these particles are responsible for soft spots on the cutting edges.

One of the liquid heating mediums which has been used successfully in heat treating work is a salt bath developed by Major A. E. Bellis, president of the Bellis Heat Treating Co., New Haven, Conn., as a result of many years of research conducted in

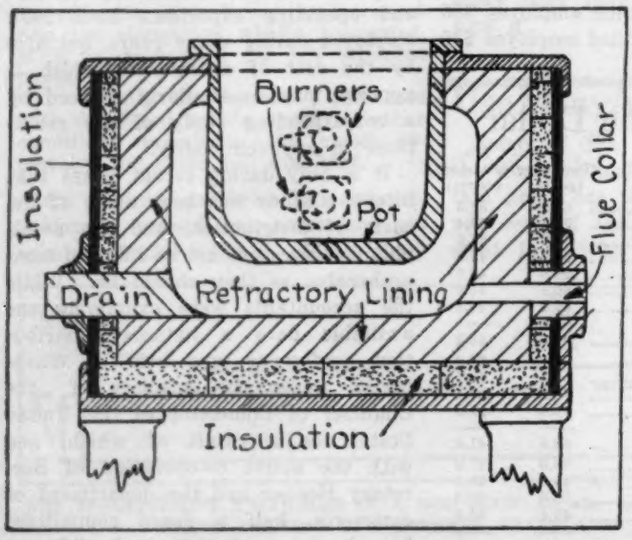


FIG. 2—A SECTIONAL VIEW OF A SALT BATH HEATING FURNACE FOR CARBON STEEL

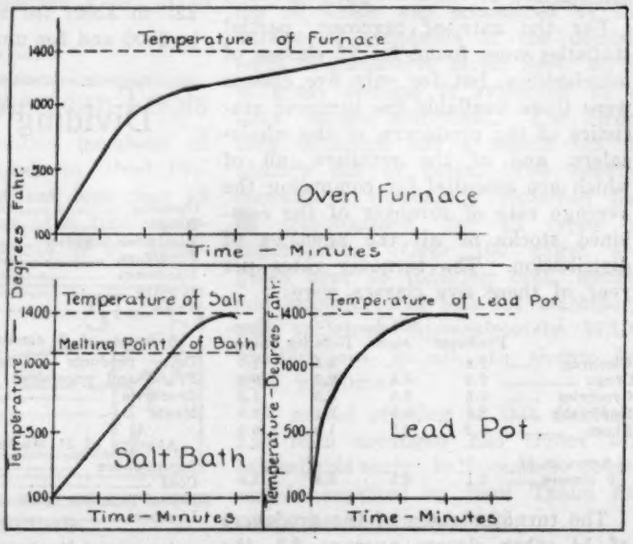


FIG. 3—HEATING CURVES OF A TOOL IN AN OVEN FURNACE, SALT BATH AND LEAD POT

the laboratories of the United States ordnance bureau. The specific gravity of the salt bath is one-sixth that of lead and results in a longer pot life. The pots, which are under high temperature, do not have to bear the heavy weight of lead which causes them to sag and induces excessive seepage losses. The salt bath is neutral to the metals treated, and for this reason, there is no scaling, pitting or other deleterious surface effects. Tools may be machined to finished size before treatment, thereby reducing to a minimum or eliminating the grinding allowance. For nonferrous annealing this method of heating is particularly effective.

A salt bath will transmit heat into metals in a manner markedly different from a lead bath or oven furnace. As a lead bath simulates more closely the heating conditions of a salt bath, a comparison between these two methods will be drawn. The difference can be explained best by a consideration of the physical properties of the two substances, as follows:

	Salt	Lead
Melting point, degrees Fahr....	1150	621
Specific heat	0.21	0.032
Latent heat of fusion.....	High	Low
Specific gravity	1.9	11.37
Viscosity	Low	High

A piece of steel immersed in the salt bath is brought up to temperature at a uniform rate, this heating effect being obtained in a most interesting manner. When the steel is introduced into the bath, the salt which has a melting point of 1150 degrees Fahr. freezes around the piece and forms an insulating jacket which prevents too rapid transfer of heat in the initial stages of the heating period. This jacket is slow in melting off, and the composition of the salt is such that the melting of the jacket proceeds at a rate which permits uniform transmission of heat into the metal. The high specific heat and high heat of fusion account for the slow rate at which the insulating jacket melts.

When the temperature of the steel reaches 1150 degrees Fahr., the jacket has entirely disappeared, and at this point also it is necessary that there be more favorable conditions for heat transfer, as the thermal heat between steel and bath has been considerably reduced. Beyond 1150 degrees Fahr. the full heating effect of the bath is obtained, and this effect is enhanced by the low viscosity of the salt bath, which permits free circulation of the heated salt around the steel. Thus with salt, the most favorable conditions for heat transfer occur during the last stages of the heating period, while with lead it occurs in the first stages. With lead also no insulating jacket or a small jacket is formed. This is due to the low melting point, latent heat of fusion, and specific heat of lead. This discussion of the physical constance of the two materials and the role which they play in heating metals explains why a metal immersed in salt is heated more uniformly. The time-temperature curves shown in Fig. 3 illustrate this point.

The cold pot of salt is brought up to heat in two or three hours, the working temperature being in the neighborhood of 1500 to 1600 degrees Fahr. Care should be exercised during the heating period, as forcing the fire causes localized heating, which in turn is responsible for short pot life and deterioration of the bath material.

The work to be hardened is first preheated by means of the waste flue gases and is then immersed in the salt bath. The length of time a piece is left in the bath depends, of course, on its shape and weight. Pyrometric indications, however, are much more accurate in salt bath furnaces than in oven furnaces. Both steel and thermo-couple are immersed in the bath and subjected to the same conditions. Upon removal of the work from the bath, a thin film of salt adheres, thus protecting the piece from scaling. The piece is then quenched in oil or any other required quenching medium, and later drawn in a bath of tempering salts.

The salt consumption depends upon the shape of the pieces hardened. Shapes which expose a large area per unit of weight have a higher salt consumption as more salt adheres to the piece when it is withdrawn from the pot. For the average run of tool and die work, about ½ pound of salt per 100 pounds of steel is required.

A sectional view of a carbon steel

(*Concluded on Page* 1152)

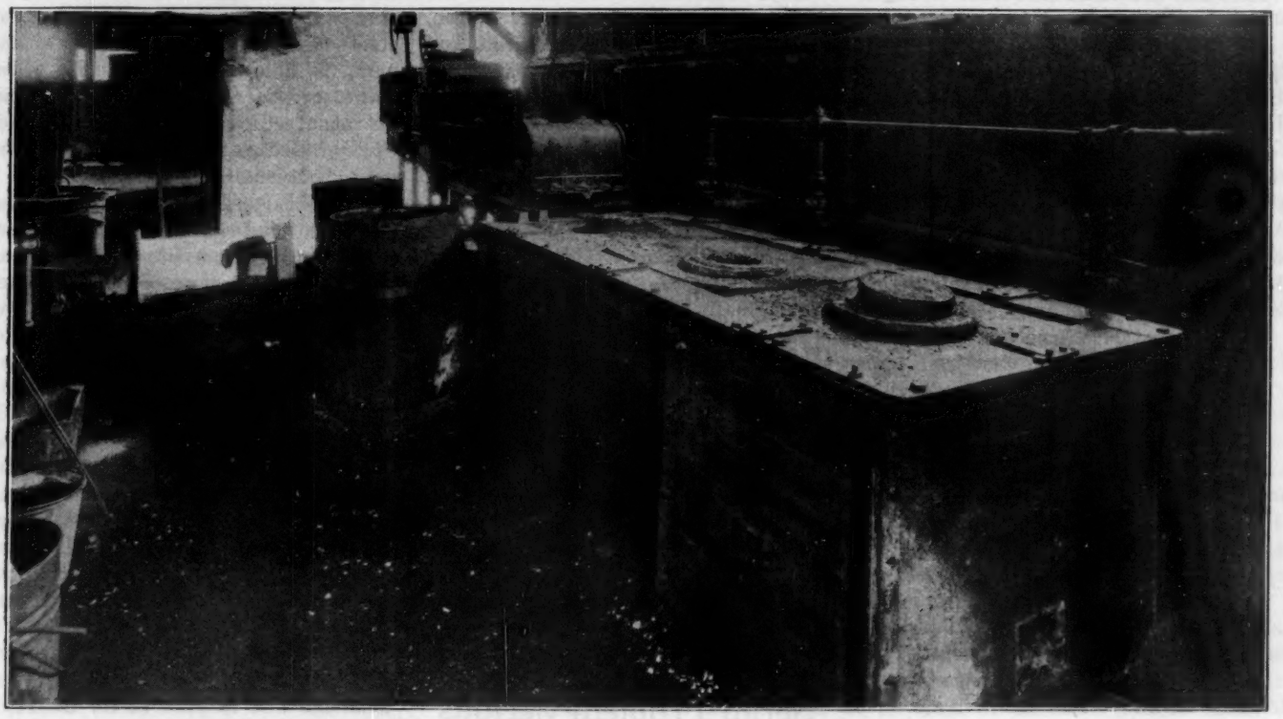


FIG. 4—FOR HEAT TREATING HIGH SPEED STEEL A TRIPLE POT FURNACE IS USED. IT MAY BE USED ALSO FOR CARBON STEEL

Correlates Iron and Steel Making Practice

By J. E. Fletcher

Part III—Influence of Scrap

IN the foregoing notes, stress has been laid on the stable character of completely graphitized cast iron, steel and malleable cast iron. Wrought iron has been placed in the category of a slowly cooled cast iron from which the carbon is removed by oxidation mainly during the semisolidification of the virtually cooling metal, there being no pearlitic range during the transition. This stable condition of approximately ferritic metal calls attention to the fact that, when cast, pig iron or steel-containing combined carbon, is of unstable structure. The transition constituents, namely, austenite, troosite, martensite, sorbite and pearlite in cast iron, malleable cast iron, and steel are relatively unstable in comparison with wrought iron and dead mild steel. To insure the maximum stability of a steel containing a mixture of constituents, a suitable heat treatment is necessary to mix them homogeneously. In gray cast iron of normal composition the constituents never are homogeneously mixed as ordinarily cast, owing to the differential rate of cooling from the outside to the inside of the mass. Hence, attempts now are being made to regularize the structure of cast iron by approaching a structure completely composed of pearlite and graphite.

A careful examination of a homogeneous pearlite structure in cast iron shows that the pearlite occurs in polyhedral grains of contour and size similar to those which would result from slow cooling, after reheating to the melting point, to the point of complete graphitization. This pearlite-filled grain structure is evidence of the effectiveness of the cooling rate which has produced it and of the stability of this type of pearlite. Experience has proved that confused structures in the pearlitic areas of steel or cast iron are indicative of internally strained conditions, the result of unequal rates of cooling within the mass. These heterogeneous structures may be connected with the imperfect diffusion of the various ingredients of the charge as melted in the cupola or open-hearth furnace.

Much remains to be done in the study of grain size in cast iron, wrought iron, malleable cast iron, and steel, but there is much that suggests the possibility of the original grains as formed during the solidification of the casting or ingot retaining their form within the metal mass, marked though their boundaries may be by later reheating and the break-up of internal structures. This suggestion receives support from the fact that an originally coarse grained iron may be so heat treated as to break up the structure and apparently destroy the primary grain boundaries. However, after reheating to near the melting point and slowly cooling, the large grains reappear as copies of their former selves. Perhaps they never actually lost their identity but were masked by the thermal treatment which only broke up the crystalline structure of their interiors.

The difficulty of estimating for any country with any degree of accuracy the percentage of scrap produced in terms of the tonnage of pig iron, iron castings, steel and iron rolled, forged, stamped and drawn material, and of steel castings and ingots, per annum, is admittedly great. In order to get even a rough idea of the trend of manufacturing methods the function of scrap in ferrous processes must be visualized.

The considerable amount of steel and iron used in structures and articles having short life through wear and tear, oxidation, corrosion, irrecoverable loss through shipwreck and accident is increasing yearly. The changes in engineering practice, causing machinery rapidly to become obsolete, particularly in the marine, railway and road traction, electrical and chemical engineering branches, are responsible for the return of scrap to the iron and steel works at a rapidly increasing rate. To this must be added the return of war scrap and scrap from the demolition of antiquated factories and plants. Altogether it will be seen that at present in order to use up the bulk of scrap available and to prevent its too rapid loss through corrosion alone, the mixtures for steel furnaces, foundry cupolas, and wrought iron scrap furnaces must contain increasing percentages of scrap. The growing use of direct metal from the blast furnace to the steel furnace throws a larger scrap proportion upon the remaining furnaces using solid charges.

One paramount factor in this scrap problem is the effect now being felt in pig iron production. The temptation to use, as additions to the ore charges in blast furnaces, scrap of nature unusable in steel and iron melting furnaces, cannot be ignored by the foundryman who often is puzzled to know the reason for abnormal happenings in his castings.

The difficulty of assorting scrap in these days and of judging its character by appearance alone, chemical analysis being in many cases imprac-

Scrap Problem Serious

THAT foundry organizations and institutions take up the consideration of the iron and steel scrap problem is suggested in this article which is the third and final part of the fourth annual British exchange paper presented at the Syracuse convention of the American Foundrymen's association, Oct. 5-9. In discussing this subject the author says "To each country whose interests in ferrous metallurgy are vital, the scrap problem must become one of national importance. It seems that the time has come for serious action, for a scientifically operated control in the interests of the iron and steel industry." J. E. Fletcher, the author of this article, is consultant for the British Cast Iron Research association, Birmingham, Eng.

ticable, constitutes a serious danger. Fluctuations in the scrap and pig iron markets cause alternations of runs on either scrap or pig. As a consequence the quality of the cheaper grades of steel and iron fluctuates. The tendency is for good quality scrap to be scarce during certain boom periods and the poorer qualities to accumulate. Then follows a harvest of poor steel and iron products, the result of the temptation to use cheap scrap. Obviously, the scrap seller can always drop his price so as to cut out pig iron competition. The greatest sufferers from these scrap fluctuations are the foundrymen and wrought iron manufacturers for when they cannot supply their own scrap needs, so-called "foreign" scrap has to be purchased.

Furnace Control Important

It is clear that if metallurgical control is necessary even when using the best of available ores and pig irons, in order to guarantee high quality "safety first" iron or steel, such control is almost hopelessly impotent when from a third to half of the furnace charges must be scrap of doubtful character. In the blast furnace the charging of mixed cast iron and steel scrap, iron and steel turnings, bundled detinned sheet and clipping scrap, to name a few of the odd materials which are generally unusable elsewhere, has resulted not infrequently in a mixed variety of pig iron of most uncertain quality, the scouring of the scrapyards of Europe.

The skill of the most expert metallurgist would be baffled were he to attempt a forecast of the pig iron composition and structural analysis made from burdens of this character. When, in addition, coke of variable sulphur and ash content has to be charged, the position of the foundryman or iron worker who may have to remelt such pig irons, which have often been sold in Europe as refined irons after being run through a cupola as a mixer, may be better imagined than described. In order to safeguard his product, the wrought iron manufacturer who values his reputation has had to make his own scrap from puddled material of known character.

In the steel works the growing use of high scrap proportions in the furnace charges has also had its dangers. It has been exceedingly difficult to procure scrap which does not contain metal with unexpected alloyed materials such as nickel and chromium. Batches of high sulphur and high phosphorus metal occasionally drift in mysteriously without warning. The gathering of scrap ferrous materials into specific areas where it can be systematically examined is occupying the attention of many metallurgists and some attempts are being made to accumulate cast iron scrap at convenient points where it can be remelted and disposed of as scrap pig iron. Unless a careful system of chemical analysis is employed at these scrap centers whereby a check on the composition of the remelted products is assured, trouble for the user lies ahead.

In the interests of the iron and steel industries this matter demands serious attention. The disposal of scrap cannot be allowed to remain in the hands of distributors who are careless and often ignorant of the scientific importance of the problem. If well handled the whole scrap problem in any country could be satisfactorily solved and the metallurgist freed from the uncertainty he so often feels when dealing with unknown scrap.

The blast furnace, as a remelter of iron and steel scrap, may possibly be one means of economically dealing with part of the problem. The cupola clearly has much importance in remelting odd casting scrap, while the open-hearth furnace may be used as a remelter of heavy scrap, and the electric furnace as a desulphurizer of such metal scrap as would tend to become useless.

To each country whose interests in ferrous metallurgy are vital, the scrap problem must become one of national importance. It seems to the author that the time has come for serious action, for a scientifically operated control in the interests of the iron and steel industry. The foundry organizations and institutions might take up the consideration of this question with great advantage to their industries, and symposiums of papers dealing with the various aspects of the scrap problem would be of great value.

Much is still unknown concerning the influence of repeated remelting of iron on the structure of the product, as compared with the remelted virgin pig iron structure. Every foundryman has his own conception of the value of certain proportions of casting scrap in his mixtures and as a consequence cupola charges vary between all pig and all scrap mixtures. How do these variations affect the structure of the product, apart from the purely chemical analysis of the ingredients of the charge and of the resulting castings?

Much has been said about the so-called inherent properties of certain brands of pig iron, the use of which is often associated with good castings. In Britain all-mine pig irons are sought because they balance the evil effect of scrap metal which, by repeated remelting, has passed a possible critical point where its structural composition has begun to deteriorate rapidly. There is of course a partial explanation in the chemical analysis of the virgin pig iron and of the repeatedly remelted scrap. However, the modification of the chemical analysis produced by varying the percentages of virgin pig iron and scrap does not always represent the differences produced in the mechanical properties. These differences are related to the structural composition of the metal and to its degree of homogeneity. In cupola melting, for example, the size of the scrap and its relative bulk in the pig plus scrap charge often plays an important part, just as the mixtures of fine and lumpy ore in the blast furnace burden may influence the character of the pig iron even when the chemical compositions of the powdery ore and of the ore lumps are similar.

Structure Is All-important

The consideration of the effects of scrap percentages in a cupola or air furnace charge results again in the conclusion that the structural composition of the product is the all-important question. It would appear that homogeneity of cast structure is the index to the quality of irons of similar chemical analysis and of similar mean constitutional analysis.

Just as the bulk analyses of molding sands of very different grain size constituency may be closely similar, so the mean chemical analyses of cast irons of greatly different grain size and structural homogeneity may be approximately or closely alike. Taking the molding sand illustration again, it may be noted that just as the addition of new to used floor sand in proper proportions enables a sand mixture to retain its properties, so the use of virgin all-mine pig iron in correct proportions in a pig iron plus scrap charge serves to regularize the structural properties of the cast product and to reduce the deteriorating influence of the added scrap. In both cases there is a time limit and a critical number of mixings beyond which the used sand and the scrap contents of the mixtures begin to deteriorate seriously.

As an illustration of the sulphur

influence in deteriorating English white-heart malleable, the result of repeated use of scrap from preceding melts, the graph Fig. 4 is given. (Page 1032, Oct. 22 issue.) In the same diagram the sulphur deterioration during the cupola melting of pig iron containing 0.08 per cent and scrap containing 0.10 per cent sulphur is given. In each case the scrap used is assumed to be taken from the preceding melt, the sulphur addition per melt being estimated as 0.03 per cent. In actual practice, of course, the scrap produced is not sufficient for the succeeding melt and foreign scrap has to be purchased. If the latter could be guaranteed to contain as low a sulphur content as the pig iron, scrap from the succeeding melts would increase much more slowly in sulphur content and it would take longer to reach the danger limit. The curves indicate clearly the approximate number of remelts required to reach the point when further remelts do not add much sulphur to the cast products. The maximum sulphur content is reached more quickly as the scrap percentage in the cupola charge increases.

By the same method of attack, the influence of scrap proportions on grain growth in the metal cast from similarly remelted pig iron and scrap mixtures is capable of determination. The oxidation of iron, silicon and manganese can also be progressively traced in relation to the number of remeltings and pig plus scrap proportions in the charges.

Buys Rights for German Diesel Engine

The Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York, has effected arrangements with Motoren-Werke, Mannheim, Germany, whereby they have acquired the exclusive rights to manufacture and sell the Benz-type solid injection diesel engine in the United States and Canada. This is of vertical, multiple cylinder type, built on the four stroke principle.

Many advantages are claimed for this engine, among them a very simple and clear design, which eliminates the use of a high pressure compressor, an injection cylinder with high pressure pipe line and injection valve. There is no ignition device, which eliminates the use of a rather delicate apparatus as well as spark plugs, cables, etc. Due to its having automatic regulations and its simple operation, it can be operated by men who have had a very limited engine experience, which tends to lower the cost of operating.

The engine operates on all kinds of petroleum and its derivatives such as gas oil, kerosene, crude oil, paraffine oil and liginite tar. Regulation is effected by a precision governor which acts on an admission valve of the fuel pump, the quantity of fuel delivered being strictly in proportion to the load on the engine. The fuel consumption is said to be unusually low.

Famous Old Iron Works Is Dismantled

J. Couper Lord's famous old Boonton Iron Works, located in a valley at Boonton, N. J., finally has passed into oblivion. The site has been purchased by a public service company for a hydroelectric development. The plant was built in 1825, and enlarged several times, until it was one of the most important iron puddling mills in the East. It had an output of about 25,000 tons of iron bars and angles annually. After Mr. Lord's death, his son-in-law, the late Benjamin Nicoll, was the chief figure in carrying on the business for his estate. Increasing use of steel was the cause of shrinkage in the company's business. The mill was last operated in 1908 and was partially dismantled several years ago.

Farm-Industry Meeting To Feature Taxes

"The most important conference of its kind in the United States in years," is William H. Barr's prediction of the meeting between farmers, manufacturers and transportation executives in New York, Nov. 18. It will be under the auspices of the National Founders association that holds its twenty-ninth annual convention Nov. 18 and 19, in New York. The president of the association in his weekly letter to members further comments on the conference as follows:

"It is a step in the right direction because it brings together three of the great economic elements in the country. Furthermore, the question of state and local taxation, which will have the serious consideration of this conference, is one of supreme importance. It is not merely a question of taking up this problem for academic discussion at the conference. The facts in the situation will be clearly stated, the problem clarified and practical plans submitted and put into effect. It will not be a case of enumerating theories but starting the machinery definitely and effectively."

Heating Steel by Salt Bath Method

(*Concluded from Page* 1149)

furnace is shown in Fig. 2. A high speed steel furnace, such as is shown in Fig. 4, has three pots. The center one is the high heat pot and is maintained at a temperature of about 2300 degrees Fahr. One of the side pots is used for preheating the work to 1600 or 1800 degrees Fahr., and the other side pot is used for quenching, and is maintained at a temperature of 1100 or 1200 degrees Fahr. In a properly designed unit, waste heat from the center pot is used for preheating the two side pots. The work is of course first preheated, and when it has reached the proper temperature, is transferred to the high heat pot. It is withdrawn from the high heat pot and quenched in the third salt bath. No scaling can take place due to the thin film of salt adhering to the steel. At the right in Fig. 1 is shown a salt bath hardening furnace, and at the left a round salt bath tempering furnace, both for carbon steel.

In planning furnaces for heat treating steel in salt baths, a number of points should be kept clearly in mind. Carbon steel is treated in salt baths at a temperature of about 1525 degrees Fahr. and high speed steel at 2200 to 2300 degrees Fahr. Pot furnaces only can be used, and unless special precautions are observed, trouble with pots under such severe usage is sure to result. Circular pots should be employed whenever possible, as these permit of more uniform heating.

A burner should be placed at the top of the furnace, and the vent at the bottom for two reasons. The point of maximum heat dissipation is at the surface of the bath, because here there is direct radiation into the room. The point of maximum input should also be at the top so that heat may be applied most rapidly at the same place where it is being dissipated most rapidly. In bringing a heat of salt down, it should be remembered that the solid salt expands on heating, and if melting can be started at the top, plenty of room for expansion is provided and unnecessary strains on the pot do not occur.

The pot should have sufficient capacity to eliminate too great a temperature drop when the cold steel is immersed in the bath. Provision should be made for reclaiming the waste heat, by preheating the work to be treated. Burners should not strike against the pot, as it will burn out at the point of impingement.

Making "Better Competitors"

National Machine Tool Builders' Committee Outlines Principles for Training Salesmen, for Benefit of Themselves, Their Employers and the Industry—Association Urged To Adopt a Policy

SPECIAL training for salesmen is recommended in a report by a committee representing the National Machine Tool Builders' association. The committee declined to prepare a specific program owing to the diversity of interests involved, but it submits an outline of principles that should govern a training course. The committee is composed of H. W. Dunbar, Norton Co., chairman; Porter Essley, Cleveland Planer Co.; W. G. Nevin, Landis Tool Co.; H. S. Robinson, Cincinnati Shaper Co., and H. K. Spencer, Blanchard Machine Co. The outline of the course recommended by the committee is presented in the accompanying table.

"Too many executives," the report states, "lack the appreciation of the possibilities of training, confusing the idea with the academic features of class room instruction, losing sight of the possibilities of preparing the salesman for his duties by acquainting him with some of the fundamentals of salesmanship as they relate to his particular business. A lack of recorded facts pertaining to this subject is regretted. Undoubtedly this can be attributed to the fact that the training of salesmen becomes an individual matter, and therefore only general principles can be indulged in when treating this subject from the broad viewpoint. So it becomes a first consideration to know what the salesman is to be trained for.

"It is not the purpose of any training course to make the salesman, but merely to equip him with a better knowledge of fundamental principles, that he may cultivate resourcefulness in executing his various sales problems.

"The value of training cannot be disputed. But what is a salesman to be trained for? It seems to your committee that a salesman has two objectives: First, to make himself valuable to his concern and second to make him valuable to himself. And to accomplish this there must be developed in the salesman sales ability, a knowledge of his company's products or the goods that he is to sell, familiarity with the methods and policies they stand for, to know all that he can of his competitors' products and policies, to be familiar with the terms upon which they are sold, and to create a personal magnetism that will gain him a hearing and instill confidence in his prospective customer.

"How can we best develop these characteristics? In other words, how shall we construct a training course? This your committee feels is a matter for each individual concern to plan and map out for itself. But it is our opinion and our recommendation that our association should adopt as a whole a policy of training for salesmen which will better qualify the man to do his job and make him, as a representative of his concern, a better competitor of fellow members."

Makes Reciprocal Bargain

When the Valley Mould & Iron Corp., Sharpsville, Pa., recently bought a tract in South Chicago, Ill., from the By-Products Coke Corp., Chicago, upon which to build a western plant it was specified by the latter that the pig iron melted by the Valley Mould corporation should be purchased from the Federal furnaces, which are owned by the by-products company.

Principles of Training Course for Salesmen Outlined

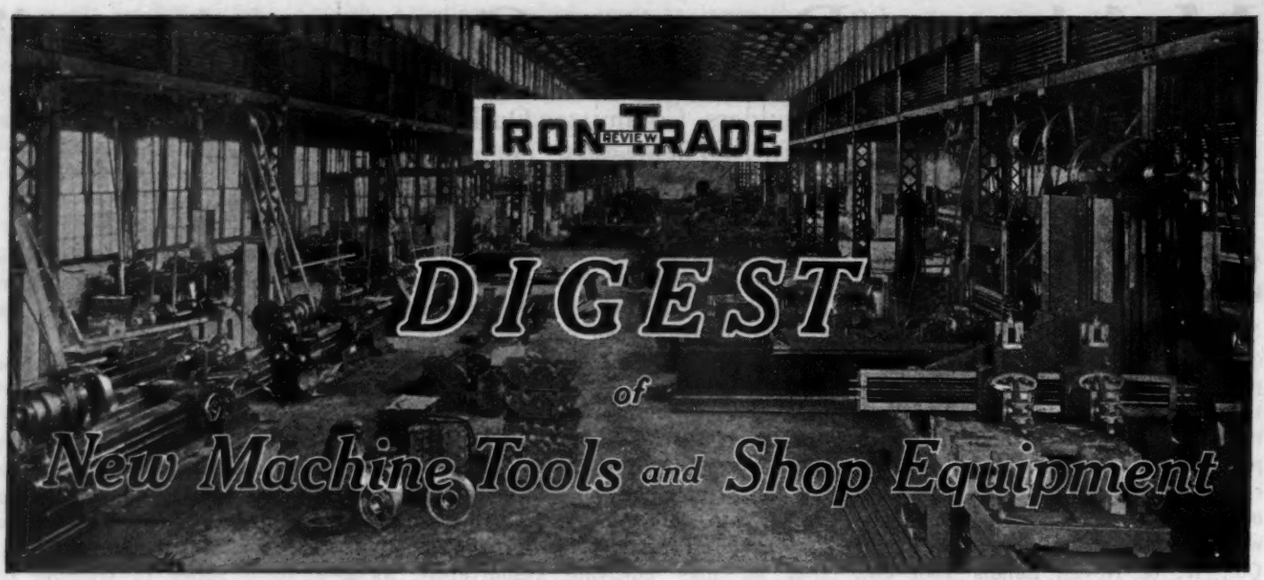
1—Development of sales ability, subdivided
- Analysis of prospect
- Selling power of proper presentation
- Importance of complying with selling system
- Salesmen's reports
- Punctuality in appointments
- Persistency in calls
- Honesty in representing product
- Importance of approach
- Ability to think and relate thoughts
- Analysis of territory
- Conservation of time
- Value of knowing when to stop talking
- Unqualified belief in product

2—Development of knowledge of product, subdivided
- Experience by actually having made or used product
- Technical points of advantages in product
- Salient features which can be based on engineering principles or technical features
- To convincingly and simply present the product
- History of product
- Knowledge of raw materials used
- Knowledge of physical capacity of plant
- Knowledge of factors that influence delivery
- Knowledge of usefulness of product
- Knowledge of productability of product

3—Familiarity with company's policies, subdivided
- Standard of ethics
- Policy in rendering service
- To what extent concern is responsible
- Knowledge of attitude toward competition
- Knowledge of advertising policies
- Knowledge of policy on adjustments
- Knowledge of traffic regulations and policies
- Knowledge of relations with dealers and agents
- Knowledge of sales manual

4—Familiarity with finance, subdivided
- Knowledge of terms of sale
- Familiarity with market conditions
- Close study and analysis of company's statistics
- How to read signs in market
- Peculiarities of others in financing sales
- Familiarity with instruments of credit, such as drafts, notes, chattel mortgages, acceptances, shipping documents, etc.

5—Development of personality, subdivided
- Personal magnetism
- Power of speech
- Quick thinking
- Analyzing prospect
- Habits of action
- Truthfulness, punctuality, neatness
- Attention to business
- Reliability
- Attitude toward competitors
- Self-confidence



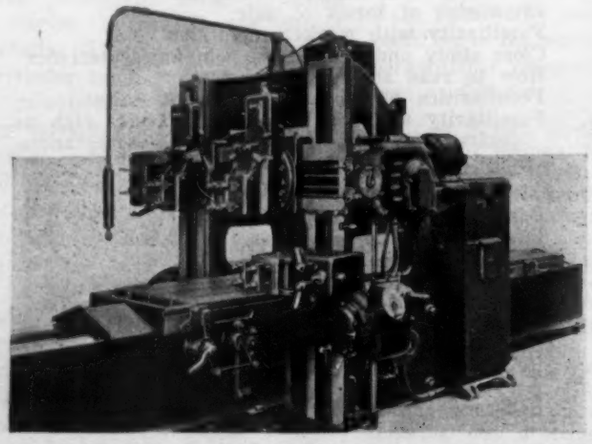
Obsolete Equipment Being Replaced

OBSOLESCENCE of much of the machine tool equipment now in use, together with the satisfactory financial condition of American industry have been the boon to machine tool manufacturers this fall. These two factors are enabling tool builders to enjoy the best volume of business in several years. This in itself is most encouraging, but still more encouraging is the fact that buying is not limited to a few branches of industry but is coming from all fields. There is nothing on the industrial horizon at the moment to indicate a slowing down of purchases. October has been an unusually good month for machinery manufacturers and sales are reported as the best of any month this year. Demand for equipment, much of a

Planer Operation Is Made Simple

No. 205

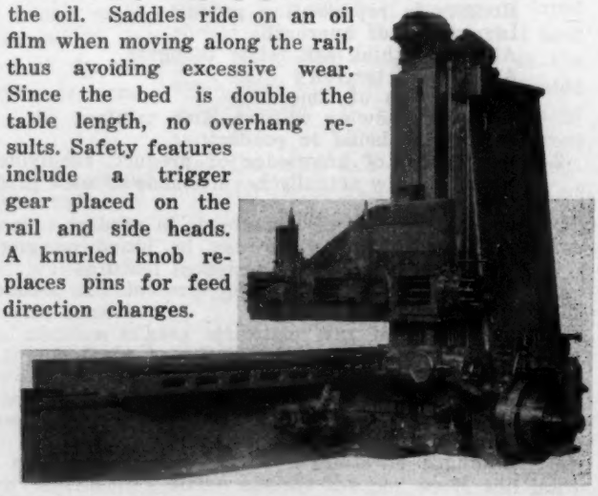
The Niles-Bement-Pond Co., New York, is manufacturing a new type planer featuring simplicity of operation. A pendent switch on a flexible cord and easily reached from any position, controls five operations: Stopping instantly; inching the table back and forth; controlling head and tool slide travel during traverse; controlling elevation or depression of crossrail, and starting table travel and automatic feed. An electric feed permits placing the feed motor directly on the end of the rail. Clamping levers save time usually lost in clamping the crossrail to housings. These levers are interlocked with elevating levers preventing moving the crossrail while clamped. The main gears are hardened and heat treated steel.



Open Side Planer Has Flexibility

No. 206

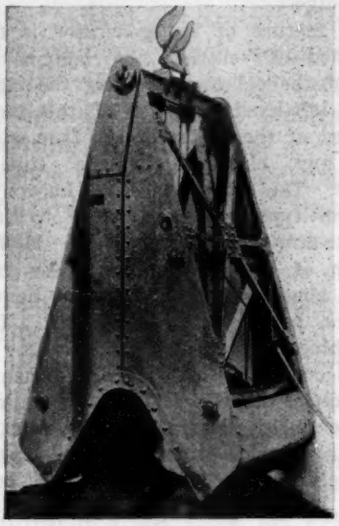
The Cincinnati Planer Co., Cincinnati, has placed on the market an open-side planer with selective dial feeds for all heads. The feed range is from 0 to 1 inch, all feeds operating independently. A crank handle automatically locks the rail and knee to the column at four points, giving great rigidity. The elevating mechanism automatically disengages when clamping, thus eliminating accidents. The machine has a rapid power traverse, automatic clutch, and taper gibs. A reversible pump inside the bed distributes filtered oil to the vees, main bearings and gears. The gears are sprayed, eliminating picking up grit from the oil. Saddles ride on an oil film when moving along the rail, thus avoiding excessive wear. Since the bed is double the table length, no overhang results. Safety features include a trigger gear placed on the rail and side heads. A knurled knob replaces pins for feed direction changes.



Bucket Handles Sand in Foundry

No. 207

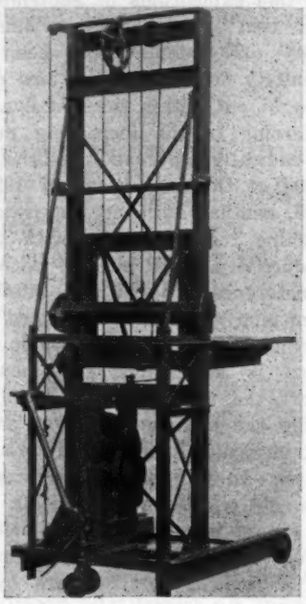
The Hayward Co., New York, is manufacturing an electric scraper bucket designed for foundry use where sand cutters are employed for preparing molding sand. Two small shells, attached to long lever arms, form the body and are opened by means of an electric closing unit within the bucket. The opening ropes are operated by toggle arms pivoted to the top of the closing unit, and are secured to a triangular yoke attached directly to an overhead crane hook. It is not the object of the bucket, having no bottom, to transport sand, the front edges of the shells being cut away so that when the bucket is closed and raised a neat sand pile is formed. The entire process is controlled by the crane operator through the hook and a controller mounted in the crane cage. The cutting edges travel horizontally and cannot dig into the floor. A floor area 16 x 5 feet is cleaned in each cut.



Power Stacker Operates Rapidly

No. 209

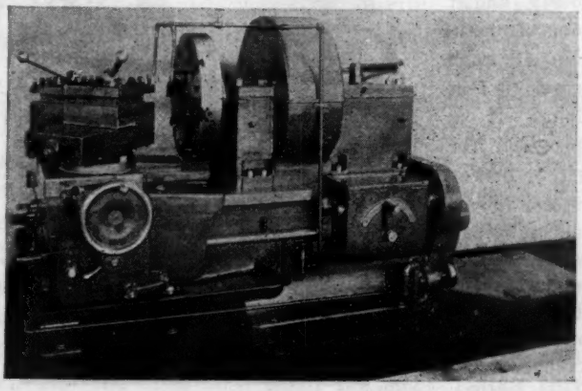
The Lewis-Shepard Co., Boston, is manufacturing a power stacker which operates as a portable elevator on the worm drive principle. The worm runs in an oil bath and there are no exposed gears. The machine operates through a controller, from a power line with a 2½-horsepower motor. It is built in 1000 and 2000-pound capacities and has a lifting speed of 40 feet per minute with a 1000-pound load. The motor is a high-torque elevator type. Safety stops and heavy insulated conductor cable are part of the equipment. The emphasis is on speed, the machine being designed for continuous or heavy piling. It is specially constructed for smoothness of operation and for ruggedness of mobility. In control, the brake is always on except when released by the operator. Oversized steel channels are used in the stacker.



Lathe Finishes Heavy Bevel Gears

No. 208

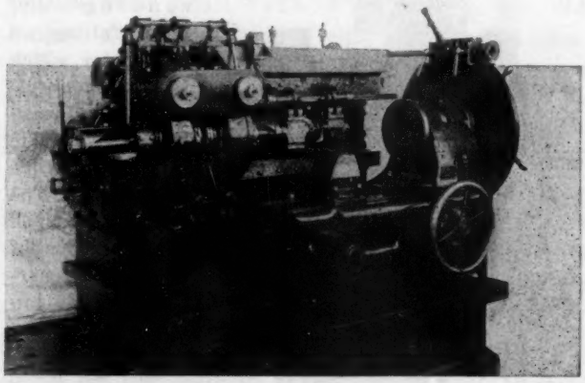
The Consolidated Machine Tool Corp., Rochester, N. Y., recently has placed on the market a lathe designed for turning face and back angles of heavy bevel gears. The bed is but 6 feet long. On it are independent cross slides arranged to facilitate clamping. Each cross slide supports a heavy swiveling tool slide carrying a revolving 4-way steel turret tool post. Separate feeds can be engaged for each tool slide as each side of the machine has an independent feed box with four feeds. A 25 or 35-horsepower adjustable speed motor is connected to the driving shaft through spur gears. The two speed changes give a wide range of cutting speeds. Gear blanks may be carried in a chuck or mounted directly on the spindle by means of an adaptor. Tool slides are designed for heavy cutting in extremely tough material.



Builds New Gear Generating Unit

No. 210

The Farrel Foundry & Machine Co., Inc., Buffalo, has developed a gear generating machine which cuts herringbone or double helical teeth having the right and left portions joined at the center of the face without clearance for cutting tools. Cutters are pinion type with involute contour teeth, and are mounted on a reciprocating carriage so that each ends its stroke when the cutting edges are at the center of the blank face. The cutters revolve in unison with the wheel blank, thus generating teeth contours. Circular adjustment of cutters to insure accurate center registration is obtained by declutching gears connecting the cutter index worms and giving independent worm movement. With this line of machines gears can be cut with diameters from ¼ inch to 18 feet and with 8-inch face 3-inch pitch to 54-inch face 4-inch pitch.



special type, has been coming steadily from the automobile industry and many of the largest car builders have bought heavily. Recently, however, there has been some slowing down in this demand but it will build up again as manufacturers become convinced of the strength of the automobile market.

An authority on machine tools, who had an opportunity to attend two of the tool expositions in September has said that it was very evident that many old designs have been made definitely obsolete by the new designs brought out within the last five years. Referring to the increasing numbers of radically improved designs introduced at the expositions of 1924 and 1925, another authority has said "The machine tool of today, with greater productivity built into it, with more transference of skill and intelligence from men to machines, can and should command a market in shops where there is an ample equipment and where the old equipment is obsolete. While the equipment factor, as such, is not limiting industrial production in the United States as a general rule, old equipment is limiting profits in many industries. This situation should continue to be made apparent to the industry's customers by individual and organized selling argument."

A brief survey of 1925 machine tool buying leads to the conclusion that the bulk of equipment is being purchased for replacement rather than expansion. This points out conclusively that machinery manufacturers are convincing industry that production can be speeded up and profits increased by the utilization of up-to-date tools. Again it may be emphasized that if tool builders will sell production, the machines will sell themselves.

Expositions Prove Beneficial

Undoubtedly, expositions of machine tools held during September and October have had much to do with convincing equipment users that they are using obsolete methods. For some time to come, tool builders should reap benefit from the New Haven Machine Tool Exhibit at New Haven, Conn., and the expositions of the American Society for Steel Treating at Cleveland and the American Foundrymen's association at Syracuse, N. Y.

From the point of view of the number of new models of machine tools announced, October fell below recent months, but this might have been expected. For many months builders have directed their efforts to the perfection of new machines and redesigned models which could be placed on display at the fall expositions. This accounts for the unusual showing of both August and September.

One of the most interesting machines announced in October was a new gear generating machine built by the Farrel Foundry & Machine Co. This equipment, which is used for cutting herringbone gears, is described briefly as No. 210 of the accompanying digest.

A feature of the generator is the method of cutting herringbone or double helical teeth, having the right and left-hand portions of the teeth joined at the center of the face without any clearance for the cutting tools. The cutters used are known as pinion type cutters, that is to say, they are themselves gears having teeth of involute contour. For cutting single helical and double helical gears, helical cutters are used. The machine is made in four sizes.

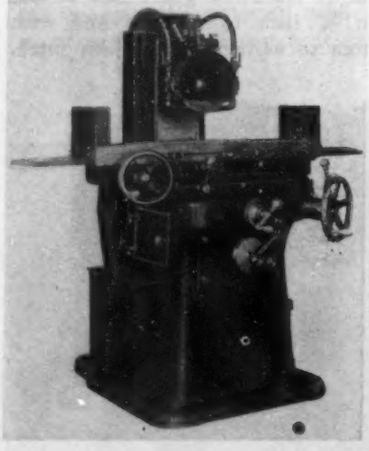
In connection with the fundamental principles of the machine, there are three basic elements upon which all other considerations can be built, namely, number of teeth in each cut-

(*Concluded on Page* 1194)

Surface Grinder Greatly Improved

No. 211

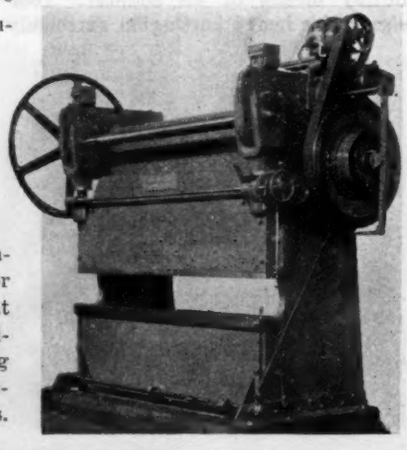
The Wilmarth & Morman Co., Grand Rapids, Mich., has announced a number of improvements on its surface grinding machine, which has a capacity 8 x 22 inches and a 10-inch wheel. It operates on a 1½-horsepower motor running at 1200 revolutions per minute. A built-in device permits the wheel being trued without disturbing the work on the table. The automatic throw-out cross feed lever has adjustable dogs to set for any desired width of grind. The main frame is a one-piece casting and is unusually rigid. The automatic mechanism is accessible without having to lift the saddle or table. The motor chamber is separate from the automatic mechanism chamber, thus preventing dirt from falling on the motor, which is direct-connected to a ball bearing drive spindle through flexible coupling. The coolant is piped to both sides of the wheel, insuring complete immersion of the work.



Press Brake Minimizes Deflection

No. 212

The Cincinnati Shaper Co., Cincinnati, is marketing a new all-steel press brake for bending, forming, flanging or punching sheet metal work. The brakes are constructed of rolled steel plate with working stresses so low as to avoid trouble from carelessness or accident. It is claimed that bending deflections are eliminated. An open throat accommodates material of any width. All gears are also of steel. There is a worm and wheel adjustment to the screw of 5 inches. The multiple disk clutch has asbestos material on friction surfaces. A brake is provided to stop the machine immediately upon releasing the clutch. The machine has a 3-inch stroke and runs 30 strokes a minute. It has a capacity of making right angle bends continuously and at one stroke in No. 10 gage steel 10 feet long. It is provided for either belt or motor drive. Unencumbered floor space in front and rear facilitates handling material and decreases accidents.



Editorials

Commercial Arbitration In Sight

BUSINESS and industrial concerns in various parts of the country are reported to be giving serious consideration to the drafting of arbitration clauses in their business and sales contracts in expectation of the operation of the federal arbitration law passed by congress last winter, which becomes effective on Jan. 1, next. This law makes enforceable in the federal courts all awards of arbitrators in trade disputes arising in interstate commerce and involving $3000 or more. It is claimed by those who have fostered this statute that it will go a long way toward cutting down costly litigation in business, the elimination of cancellation of contracts and delayed justice in cases of breech of contract.

Trade associations, chambers of commerce and similar organizations would do well to begin planning their arbitration tribunals for their industries. In view of the fact that a supreme effort is to be made within the year to obtain uniform state laws on arbitration enforcement, modeled on the form of the national law, it makes it appear that within a comparatively short time the backing of awards of business arbitrators by the courts will become general. The Arbitration Foundation, Inc., has been set up as a permanent advisory body in New York, and this organization is prepared to furnish valuable counsel on procedure under the new federal law. The fact that the American Bar association not only has indorsed this law, but that, with the chamber of commerce of the State of New York, it largely was responsible for its enactment, should recommend operation of the statute to the business and industrial world.

Steel Industry Grows in Manpower

CHANGES in industry during the past 50 years generally are considered in terms of inventions, developments, mechanization, and other impersonal terms. A survey just completed by the national industrial conference board discloses the fact that since 1870, the steel industry has risen from nineteenth to eleventh place as an employer of labor. In 1870, there were 1215 persons of every 1,000,000 of population employed in the iron and steel industry. In 1920 there were 8006 of every 1,000,000 population so employed. In relative growth during the semi-century the iron and steel industry ranks third, its increase being 558.9 per cent. It is second only to office employes and clerical help, plumbers, gas and steam fitters. As iron and steel is the basic and commanding factor in supporting the present era of civilization so is it a leading industry in supplying employment and the resulting comforts of life.

Steady Operation Proves Value

BY MID-OCTOBER the Chicago mills had shipped more heavy finished steel than in all 1924, and the year's total may set a new high record for the district. That this condition is possible without a strain upon both prices and the processes of production testifies to the capacity of the Chicago mills and the excellent transportation being afforded by the railroads. It substantiates the belief of steelworks managers generally that steady operation at a moderate gait is preferable by far to spurts and consequent setbacks.

In the early months of 1925, especially March when the leading producer surpassed all monthly records, Chicago mills were operating at capacity, but they shortly fell back to 70 per cent. At no time has the district fallen below 70 per cent, and for the year to date the average is 75 to 77 per cent. Backlogs have not averaged over 30 days and the mills have not had heavy railroad business to cushion them but general demand kept coming out in even volume and the mills plodded away, unheralded, to a tonnage in 41 weeks equalling last year.

Prices have not been what producers had hoped but tonnage has come close to being a neutralizer. The steady gait has made for stable labor conditions. Consumers have been enabled, by mill capacity and good transportation, to keep inventories and hence costs down. It appears that 1925 will, on the whole, prove a more satisfactory year to the mills than 1924, when production stayed longer at capacity but was averaged down by some weeks at 38 per cent and a slow recovery thereafter.

Solutions That Do Not Solve

THE problem which Premier Baldwin faced in England when he decided to subsidize coal mining was somewhat akin to that which confronted President Wilson in 1920 when the railroad employes were threatening to strike. Both men sought to settle the matter in exactly

opposite modes of procedure, both of which now seem equally futile.

It will be recalled that subsidization was considered in congress at that time but was emphatically squelched. When all other attempts to iron out the difficulties seemed but to have created further bitterness, the President forbade the rail unions to strike. They struck.

Premier Baldwin, when faced with the federationist threat of strike, may have recalled the fate of Wilson's manifesto. At any rate, he made the bold move of subvention into the coal disagreements, braving a united press and parliamentary opponents alike. After operating only a month under this novel sop to labor, it is found that no profits whatsoever have resulted but instead an actual loss of 2s 2½d a ton has been entailed. Perhaps labor is satisfied; but it is perfectly evident that to continue this situation means shutting down the mines, in which case the federation would be decidedly worse off than before their demands were satisfied.

Over a century ago, Benjamin Franklin made the homely statement that "God helps them that help themselves," a rather trite parable which has a great deal of truth. It seems a peculiar trait of human nature to work least hard for that which comes the most easily. It is one thing to subsidize a monopolistic industry, and a vastly different matter entirely to interfere with a competitive business, so as to guarantee one party higher payments than the industry can economically justify.

Labor Becoming More Restless

DEMANDS from the Brotherhood of Railway Trainmen for an increase in wages to the wartime peak, presumably to be followed by similar action on the part of other organized railroad employes, generally are credited to the restiveness of labor as a consequence of the country's increased prosperity. The National Industrial Conference board recently issued a statement to the effect that the tendency of industrial wages continues upward; that in some industries substantial advances were made in July and August, and slight increases in other lines since then. This is the result of improved business conditions. Following the regular course of wages in their relation to operations further demands may be expected from trade unions.

In many industrial lines wages a year ago remained practically at wartime levels; the fluctuations in workers' incomes have been due to variation in working time, but rates were not far removed from the highest points. The railway trainmen are making capital of this in asking for a restoration of their wage rates in effect before they were reduced 12 per cent. Railroad employes' wages are among the highest paid to industrial or craft groups.

Should the bituminous coal miners be called out on strike to bolster the cause of the anthracite strikers as it is reported may now be done, another major labor difficulty would be created. At present prospects, industry may be called upon during the next year to face the factor of increased employe disturbance from which it has been singularly free in months. This is the normal concomitant of good business conditions.

What Our Readers Are Thinking

How Far Should a Foundry Mechanize?

To the Editor:

THE limit in mechanizing a foundry must be the point between a drive for mere profits, immediate cash returns, and a sincere desire to contribute something constructive to the world of useful arts, without the sacrifice of those things usually classified as the humanities. To seek large profits quickly through inexorable production methods is to "profiteer" on the employe, and is just as reprehensible as to sleepily plod along in a rut, which sooner or later will end in the death of the business through dry rot.

A basis of old time practice is necessary to the modern foundry. Mechanization should be used, not to supplant but to support and supplement it.

My thinking on the subject is best expressed by our own plant. Among the steel foundries of the country it ranks with the best. It is well constructed and well laid out for the production of medium size steel castings, and its operations are thoroughly mechanized and synchronized. It is 100 per cent electrical. Electric furnace melting, electric oven drying, electric annealing and electric power. Wherever possible the processes are under automatic control and yet, notwithstanding the large and complete mechanical equipment, this foundry has always made it a practice to maintain and depend upon a corps of experienced "old school" foundrymen who understand fully the art of hand molding, and are capable of utilizing mechanization in applying their experience.

A foundry serving the public must be prepared to do anything it is called on to do and to do it quickly. Not all work is adaptable to production methods. Frequently, though, it is just this sort of work that buyers need most, and it is usually the most difficult to obtain.

A good motto for any foundry is "Cast anything for anybody, if it can be cast" and while this policy frequently attracts work in which there is no profit, it serves to build up a reputation for dependable prompt service cheerfully extended to all who wish to avail themselves of it. After all, that is the basis for relations which result in the best and surest year-in and year-out profits.

DAVID EVANS, *President,*
Chicago Steel Foundry Co., Chicago.

Oct. 28.

The Reader's Page

Vol. LXXVII, No. 19 IRON TRADE REVIEW Nov. 5, 1925

Implement Makers Express Need for Price Stability

NEED for price stabilization again was expressed by manufacturers last week, this time by members of the National Association of Farm Equipment Manufacturers, who held their convention in Chicago. The chairman of the association's executive committee declared that there is nothing to justify hope of lower wages or costs, and that price stability is important, especially in the implement industry because of the comparatively slow rate of turnover. Discussions of such need have been the theme of a number of associations of manufacturers in meetings recently. The equipment makers are operating under conditions nearer to normal than at any time since the beginning of the war. The manufacturers said that farm costs must be lowered if this prosperity is to continue. The implement industry is meeting its responsibility, speakers stated.

Farm Implement Sales Increasing
Page 1183

Contents

SPECIAL ARTICLES

Theory and Practice of Rolling Steel—Chap. II (Cont.) ..... *By Wilhelm Tafel* 1143
Where the Consumer's Dollar Goes 1147
Heating Steel by the Salt Bath Method.... 1148
Correlates Iron and Steel Making Practice—Part III ..... *By J. E. Fletcher* 1150
Making "Better Competitors" 1153
Obsolete Equipment Being Replaced 1154
Editorials 1157

GENERAL NEWS

Oppose Government in Industry 1178
Testing Materials Committees Meet in Cleveland 1178
Iron Production in Good Gain..... 1182
Equipment Makers See Real Farm Prosperity ..... *By E. C. Barringer* 1183
Industrial Men in the Day's News—*William G. Clyde* 1185
New Head for Carnegie Steel Co. 1187
Refractories Institute Technical Session Success 1192

Men of Industry 1186
Here and There in Industry 1188
Obituary 1190
Construction and Enterprise 1197
Business Changes .. 1193
New Trade Pubs..... 1201

MARKET REPORTS

Review of Markets ..... *By C. J. Stark* 1164
Iron and Steel Prices 1165, 1166, 1170, 1191, 1196

Pig Iron 1167
Coke 1168
Ferroalloys 1168
Semifinished 1169
Plates 1169
Iron and Steel Scrap 1171
Sheets 1171
Tin Plate 1172
Strip Steel 1172
Pipe 1172
Bars 1173
Nuts, Bolts, Rivets.. 1173
Cold Finished Steel 1173
Hoops and Bands 1173
Structural Shapes .. 1174
Reinforcing Bars 1175
Railroad Equipment 1176
Wire and Nails 1176
Nonferrous Metals .. 1177
Coke By-Products .. 1177
Pacific Coast Markets 1178
Foreign Markets 1179
Machinery Markets.. 1180
Crane Inquiry and Awards 1180
Warehouse 1191

BUSINESS TREND

Wide Spread Between Prices and Wages ..... *By John W. Hill* 1160

Steel Corporation Earnings 1161
Iron and Steel Foreign Trade 1161
Corn and Wheat Prices 1162
Farm Implements .. 1162
Emigration 1163

IRON TRADE REVIEW is published every Thursday by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulation; Associated Business Papers, Inc.; and National Publishers Association.

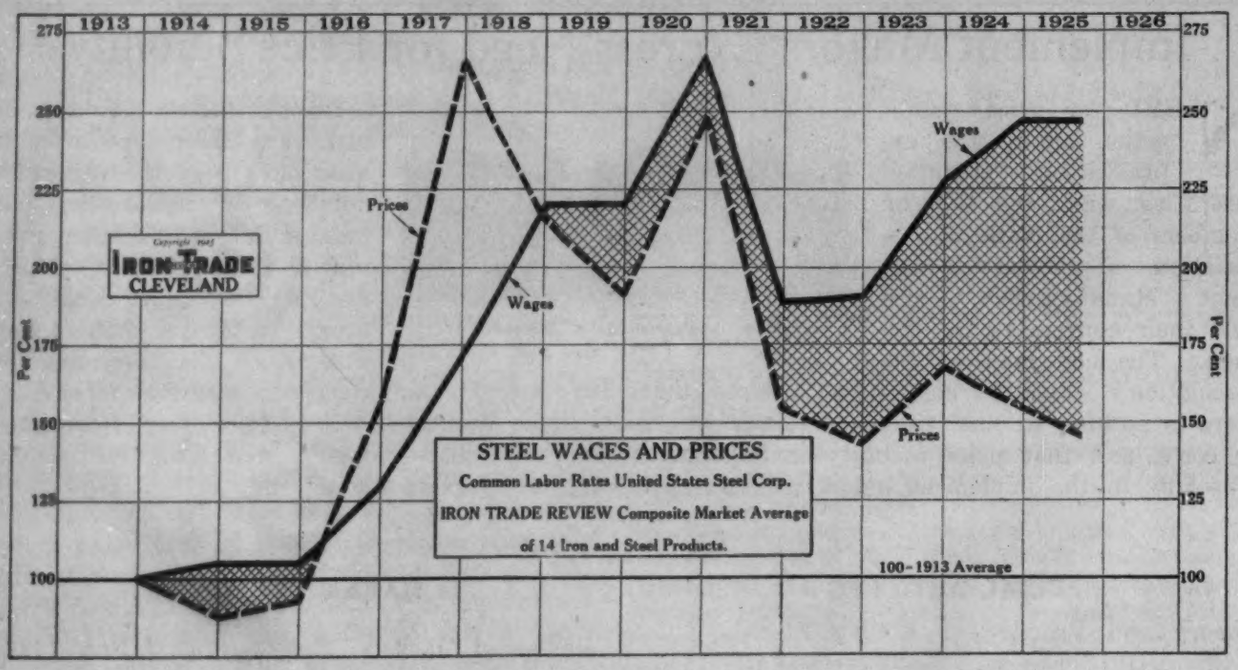
Charles J. Stark ..... Editor
Earl L. Shaner ..... Managing Editor
John D. Pease ..... Advertising Director
Frederick V. Cole ..... Circulation Manager

Branch offices: 1037 Old South Bldg., Boston; 1147 People's Gas Bldg., Chicago; 408 Edwards Bldg., Cincinnati; 2203-2206 No. 220 Broadway, New York; 2148-49 Oliver Bldg., Pittsburgh; 24 California street, San Francisco; 401 Westory Bldg., Washington. Foreign Offices: Prince's Chambers, Birmingham, Eng.; 2-3 Caxton House, Westminster S. W. 1, London; 23 Rue de la Bienfaisance, Paris, France, 218 Freidrichstrasse, S. W. 48, Berlin, Germany.

Cable address: *PENTON*, Cleveland; *IROTRAPEN*, London.

Terms: Subscription in United States, Cuba and Mexico, $6 per year; in Canada, $8.50 per year and in Great Britain and other countries, £2:0:0 per year. *Entered at the Postoffice at Cleveland as Second Class Matter.* *Copyright 1925 by the Penton Publishing Co.*

The Business Trend



Spread Is Wide Between Wages and Prices

By JOHN W. HILL, Financial Editor

THE spread between the relative levels of wages and prices in the iron and steel industry this year is the widest ever recorded. As shown by the accompanying diagram the common labor wage rate of the United States Steel Corp. is now 247 per cent of the 1913 base. IRON TRADE REVIEW's composite market average of 14 iron and steel prices is 144 per cent of the 1913 average.

This means that there is a spread of 103 points between the two indexes. In 1924 the average spread over the year was 92 points. Before this the largest divergence came in 1917 when prices were 95 points higher than the wage level. This was due to the dizzy war advance of prices prior to the establishment of government control.

The following table shows how wages and prices have compared since 1913, taking that prewar year as the base of 100.

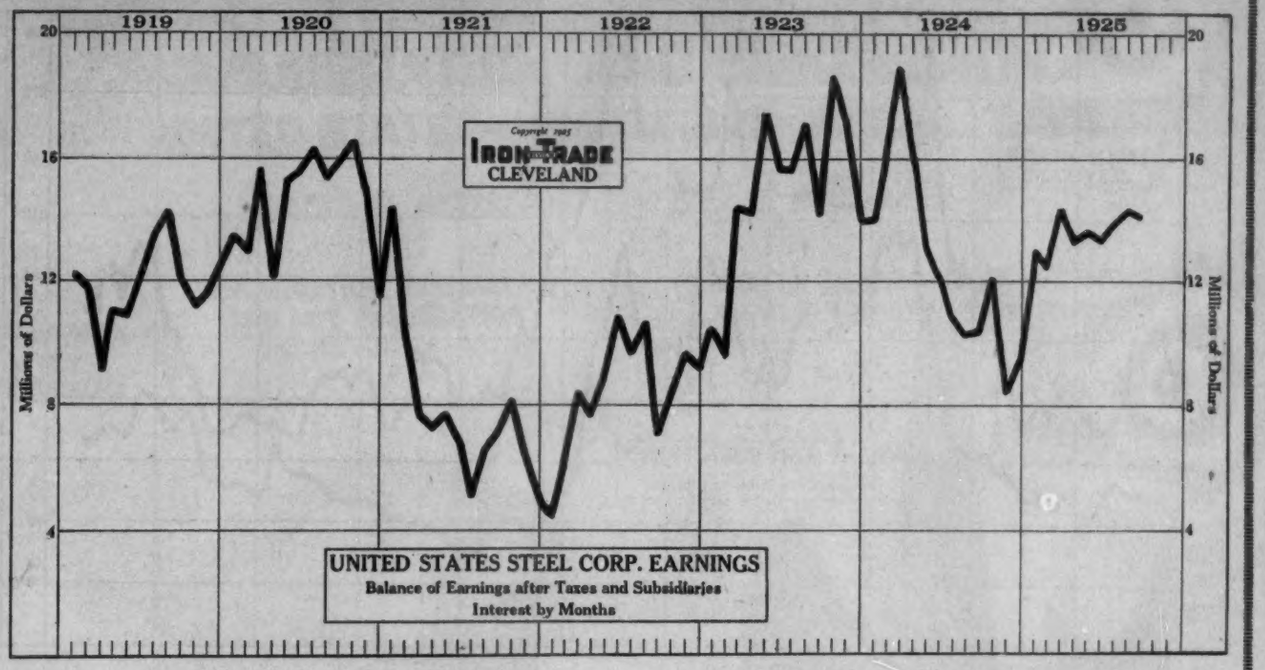
Year	Wages	Prices	Spread
1913	100	100	.....
1914	105	87	18
1915	105	94	11
1916	130	154	24
1917	171	266	95
1918	221	215	6
1919	221	191	30
1920	266	249	17
1921	188	155	33
1922	189	144	45
1923	228	169	59
1924	247	155	92
1925	247	144	103

Relative to prices the wage cost of production clearly is excessive and a leveling process is overdue. Present conditions do not indicate that downward wage revisions are probable soon. Immigration restriction has cut off a source of fresh labor supply, moreover the demand for labor is increasing with expanding business. If the spread is to be narrowed it must be done by higher prices. Current market conditions and prospects in fact now point to firmer quotations.

The margin of the spread likely will be lessened; it hardly will be completely closed. The trend in the iron and steel industry in recent years has been toward the development of labor and cost saving methods. Thus the output per man is increased, while high wages per man are offset, in part at least, by lower unit costs.

Not only are prices out of line with costs, but they are out of line with other commodity prices, the average of which now stands at 160 per cent of 1913. All this, has told in iron and steel company earnings. Third quarter earnings of leading companies show marked improvement over the depressed levels of one year ago, but in the main the rate of return on invested capital in the industry remains extremely low. Signs are multiplying that this condition is about to undergo a wholesome change.

The Business Trend

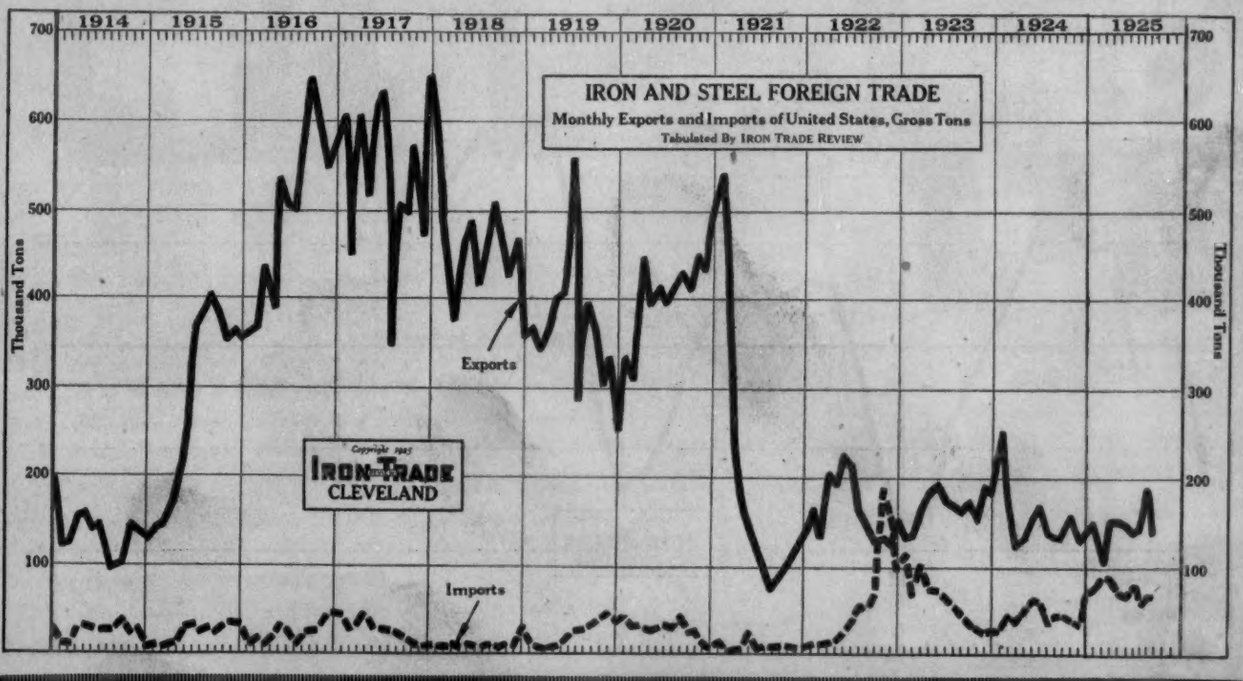


Steel Corp. Earnings

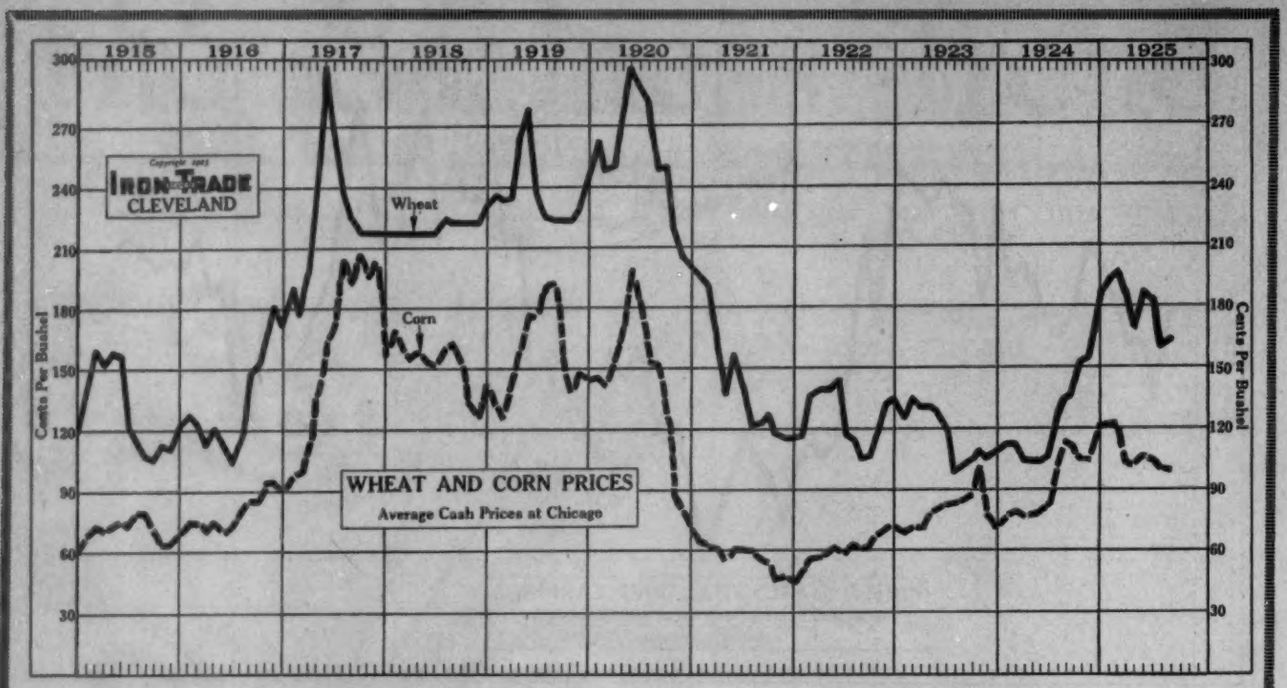
EARNINGS of the United States Steel corporation in the third quarter of 1925 were $42,400,412 compared with $40,624,000 in the previous quarter and with $32,520,000 in the corresponding quarter of 1924. The showing of earnings by months indicates a healthily rising tendency, with the improvement in operations and the growing firmer of prices causing earnings for the third quarter to increase by 40 per cent over the like period of 1924. July, which marked the low ebb of operations for the year, had the smallest earnings of the quarter.

Iron and Steel Foreign Trade

EXPORTS of iron and steel products dropped sharply in September. The total for the month was 136,754 tons compared with 188,963 tons in August. Except for February's shipments of 102,302 tons September's aggregate was the smallest for any month this year. It was larger than the total of 135,894 tons in September 1924. Imports held their own in September, totaling 68,445 tons against 68,489 tons in August and 45,216 tons in September 1924. For the eight months exports show a decline from 1924 and imports, a gain.



The Business Trend

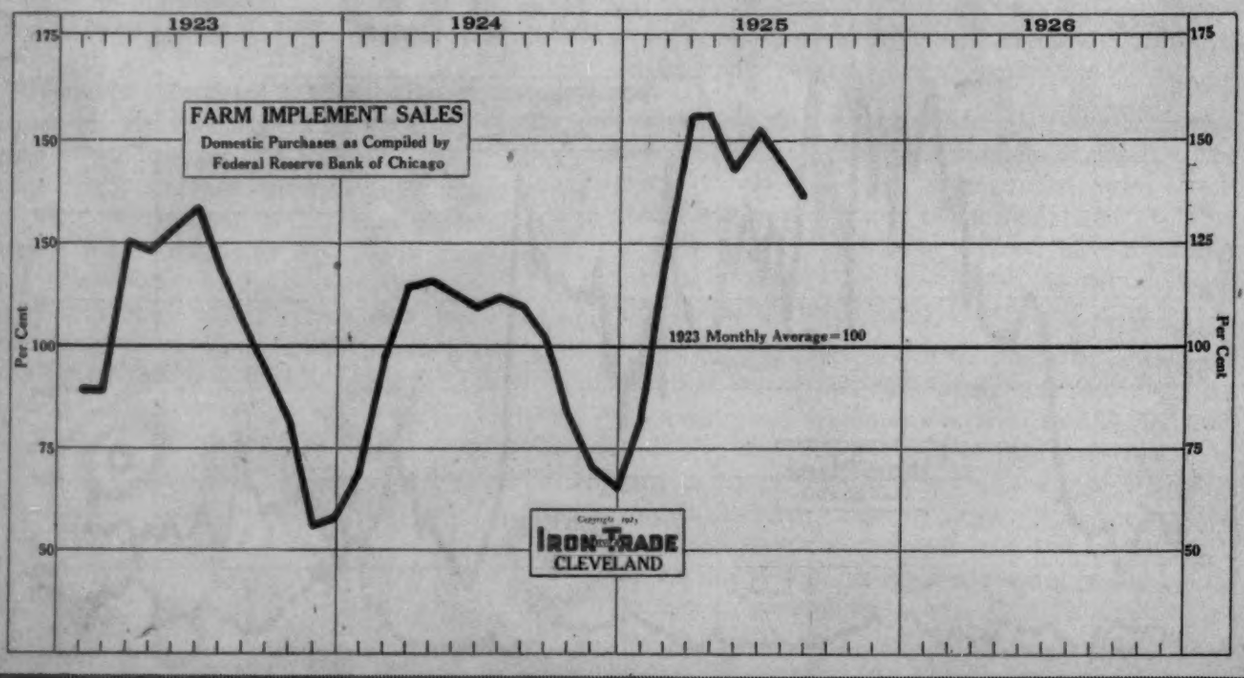


Corn and Wheat Prices

ONE of the important features of commodity price movements in the past few months has been the declines in grain prices. Both corn and wheat have receded about 40 cents a bushel from their high levels attained early in the year. The decline of corn has been offset by the enormous crop of corn promised for this year, while the wheat price is still well within profitable range. The recession in grains, therefore, has not been a serious blow to the farmer's purchasing power.

Farm Implements

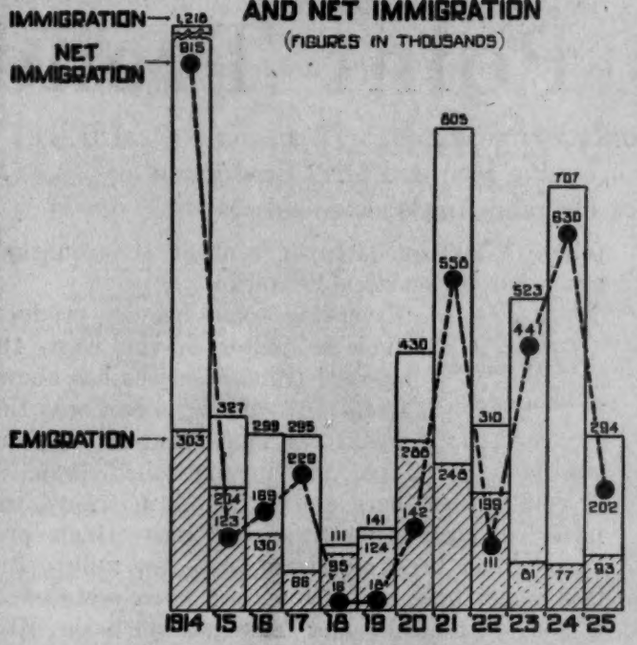
STRONG evidence of the continued high level of purchasing power now in the hands of the farmer is seen in the record of farm implement sales. During the first eight months of 1925 domestic sales of implements, as computed by the Federal Reserve Bank of Chicago, the average monthly sales increased 31 per cent over the like period last year and 22 per cent over 1923. In August the index of sales was 23 per cent above that of August 1924 and 28 per cent over August 1923.



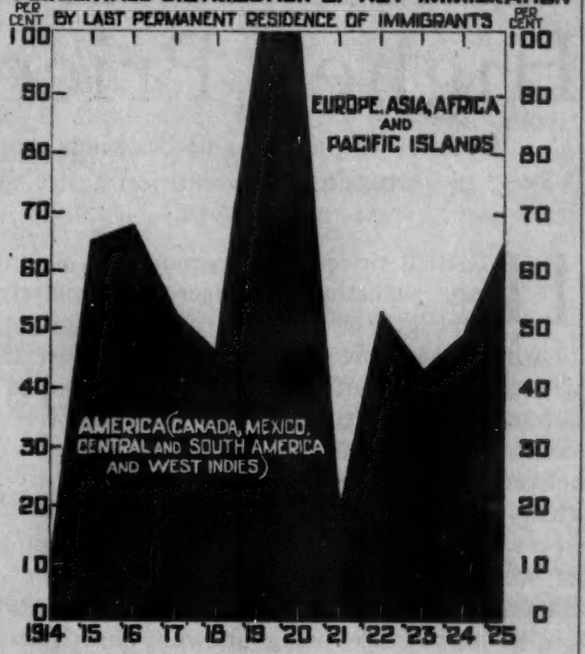
IMMIGRATION AND EMIGRATION
UNITED STATES - 1914 TO 1925 - FISCAL YEARS

COPYRIGHTED BY
NATIONAL INDUSTRIAL CONFERENCE BOARD, INC.
NEW YORK CITY

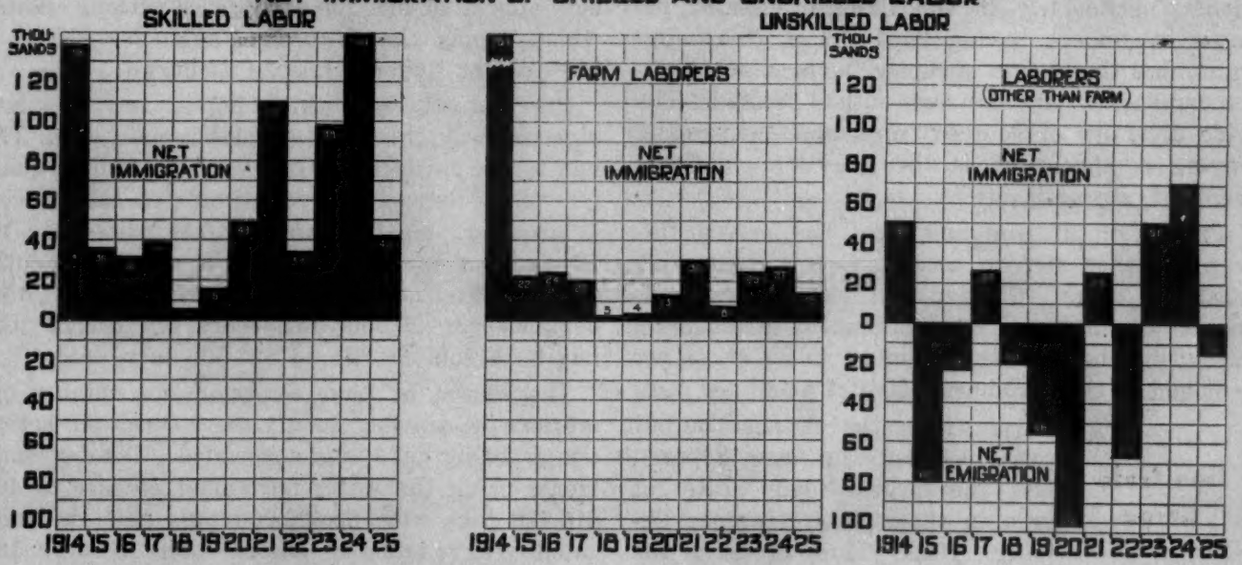
IMMIGRATION, EMIGRATION AND NET IMMIGRATION
(FIGURES IN THOUSANDS)



PERCENTAGE DISTRIBUTION OF NET IMMIGRATION
BY LAST PERMANENT RESIDENCE OF IMMIGRANTS



NET IMMIGRATION OF SKILLED AND UNSKILLED LABOR



"Immigration" and "Emigration" include all aliens arriving in or departing from the United States, except persons connected with foreign diplomatic services, visitors, aliens in transit, seamen, and aliens entitled to enter the United States solely to carry on trade in accordance with the provisions of commercial treaties

"Net Immigration" is the excess of immigration over emigration, and "Net Emigration" the excess of emigration over immigration

The geographical distribution of net immigration shown in the upper righthand chart is based on last permanent residence of immigrants, and reported future permanent residence of emigrants, irrespective of nationality

(SOURCE: U.S. BUREAU OF IMMIGRATION)

N.I.C.B. WALL CHART SERVICE - NO. 118
SEPTEMBER, 1925

Higher Prices Point Trend

October Shipments and Bookings Approximate High Point for Year and Reveal Increasing Consumption and Confidence—Pig Iron and Steel Production Move Forward—Sources of Demand Are Widespread

HIGHER prices in numerous lines definitely are reflecting the increased underlying strength of the iron and steel situation, to which it is now more apparent, October made a notable contribution. Both shipments and incoming orders in the month just closed were the heaviest of the year for some of the largest steelmakers; with others, they were only slightly less than the highwater mark of last January. On every hand, the marks of enlarged consumption, of well-filled plant capacity and of greater confidence on the part of buyers in providing for expected wants, are being shown. More pressure is being laid on producers to speed up shipments, particularly in the Chicago district, because consumers having kept stocks at a minimum, find themselves abruptly facing much heavier demands from their own outlets of trade. The wide diversity of sources from which expanding buying is appearing, is the market's chief element of strength.

Production of iron and steel has moved forward another step to accommodate the growing needs of users. Chicago producers are operating on the basis of 82 per cent of steelmaking capacity, those in the Mahoning valley at 84 per cent and in the Pittsburgh district at 80 per cent.

Iron Gain Large

In pig iron, the October output rose 15.1 per cent over September, the largest daily rate of gain in three years or since October, 1922. This brought the gait of production up to 90.7 per cent of the highest monthly mark in history which was in May, 1923. Total production in October was 3,242,123 tons, a gain of 516,238 tons over September. In October the country made pig iron on an annual scale of 38,200,000 tons. The number of active furnaces showed a net gain of nine for the month. This raised the total at the end of October to 209 or 54.1 per cent of the country's gross list of serviceable stacks.

Many Lines Raised

Excepting some heavier products such as plates in the East, the upward trend of prices has shown itself in various directions this week. In finished steel, this has consisted of $3 per ton in cold-rolled strip, $2 in cold-finished bars and $2 to $4 in sheets, the latter making general an advance which previously had been restricted to a few mills. Billets, sheet bars and slabs have been restored to a $35, Pittsburgh and Youngstown basis after recent sales at $1.50 to $2.50 less. Wire products appear in line for early price action. Plates which supply the discordant note, are softer in the East at 1.60c to 1.65c, Pittsburgh.

Pig iron still is working higher and in a less vigorous way this week. Sales remain good. The number of furnaces withdrawing from first quarter selling because of over-stimulated coke prices, is growing. Eastern and Buffalo prices are up 50 cents or more further. Alabama and Southern Ohio iron have been raised to $21. At Philadelphia over 20,000 tons more of foreign iron has been sold at $21 to $23.50, duty paid.

The season of Lake Superior iron mining operations is drawing to a close. Open pit activities probably have been suspended. October shipments bring the water movement to date to 49,816,469 tons with 53,300,000 tons now the indicated year's total by lake, a gain of over 10,000,000 tons over 1924.

Car Orders Better

An award of 4000 freight cars by the Frisco adds point to the expectations of larger equipment buying. The Missouri, Kansas & Texas will build 500 cars in its own shops. The New York Central may raise a 2000 inquiry to 4000. New negotiations are

2000 for the Lackawanna and 1200 for the Lehigh Valley. Rail buying is going ahead steadily. The Pennsylvania has arranged for 160,000 tons with definite orders yet to be given. The Reading has reserved 30,000 tons and the Chesapeake & Ohio's 30,000 tons finally is placed.

The coke market is a shade less excited, due to warmer weather and some surplus. Furnace coke is $8 against $8.50 to $9.75 one week ago.

The sharpest weekly advance since March, 1923, is revealed by IRON TRADE REVIEW composite of 14 leading iron and steel products which has reached $38.44. Last week it was $37.95.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Nov. 4, 1925	Oct. 1925	Aug. 1925	Nov. 1924
PIG IRON				
Bessemer, valley, del., Pittsburgh	$22.26	21.46	20.76	22.11
Basic, valley	19.50	18.70	18.00	19.25
Basic, eastern del., eastern Pa.	22.25	20.50	20.50	21.46
*No. 2 foundry, del., Pittsburgh	21.76	20.96	20.26	21.36
No. 2 foundry, Chicago	22.00	21.60	20.50	21.00
*Southern, No. 2, Birmingham	21.00	19.25	18.00	17.90
*Southern Ohio, No. 2 Ironton	21.00	19.65	19.40	20.90
**No. 2X, Virginia furnace	23.00	23.00	23.00	24.50
**No. 2X, eastern, del. Phila.	23.76	22.61	21.76	22.98
Malleable, valley	20.00	19.20	18.50	19.75
Malleable, Chicago	22.00	21.60	20.50	21.00
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	21.26	20.46	19.76	20.76
Ferromanganese, del., Pittsburgh	119.79	119.79	119.79	107.29
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	3.00	5.65	3.10	3.00
Connellsville foundry, ovens	3.50	5.95	3.80	4.05
SEMIFINISHED MATERIAL				
Sheet bars, open hearth, Youngstown	35.00	33.50	38.25	37.00
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	35.00	37.00
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	35.50
Wire rods, Pittsburgh	45.00	45.00	45.00	45.50
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.00	2.00	1.95	2.05
Steel bars, Chicago	2.10	2.10	2.10	2.05
Steel bars, Philadelphia	2.27	2.27	2.27	2.295
Iron bars, Philadelphia	2.12	2.12	2.17	2.345
Iron bars, Chicago, mill	1.90	1.90	1.90	2.10
Beams, Pittsburgh	1.90	1.90	1.95	2.00
Beams, Philadelphia	2.17	2.17	2.17	2.12
Beams, Chicago	2.10	2.10	2.10	2.15
Tank plates, Pittsburgh	1.80	1.80	1.85	1.85
Tank plates, Philadelphia	1.92	2.02	2.12	2.02
Tank plates, Chicago	2.10	2.10	2.10	2.15
Sheets, black, No. 28, Pittsburgh	3.25	3.10	3.15	3.45
Sheets, blue anl., No. 10, Pittsburgh	2.40	2.25	2.30	2.60
Sheets, galvanized, No. 28, Pittsburgh	4.50	4.25	4.20	4.60
Sheets, black, No. 28, Chicago	3.35	3.35	3.35	3.65
Sheets, blue anl. No. 10, Chicago	2.45	2.45	2.45	2.85
Sheets, galvanized, No. 28, Chicago	4.55	4.45	4.40	4.75
Wire nails, Pittsburgh	2.65	2.65	2.65	2.75
Wire nails, Chicago	2.70	2.70	2.70	2.95
Tin plate per base box, Pittsburgh	$5.50	$5.50	$5.50	$5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	19.50	18.40	19.25	19.85
Heavy melting steel, eastern Pa.	17.00	17.00	16.50	18.05
Heavy melting steel, Chicago	16.25	16.25	16.05	17.05
No. 1 wrought, eastern Pa.	18.25	18.25	18.25	18.95
No. 1 wrought, Chicago	17.50	16.30	17.45	17.10
Rails for rolling, Chicago	19.50	18.55	19.10	18.20

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Nov. 4, 1925)	$38.44
Last week (Oct. 28, 1925)	37.95
One month ago (October, 1925)	37.61
Three months ago (August, 1925)	37.39
One year ago (November, 1924)	39.00
Ten years ago (November, 1915)	28.64
Twelve years ago (November, 1913)	24.02

Late News Flashes

Chicago Production Is Up

Chicago, Nov. 3.—Ingot production in the Chicago district has advanced several points and is now at an average of 82 per cent for this district. Another steel works blast furnace stack may be blown in shortly. At present 24 out of 35 steel works and 8 out of 10 merchant stacks are active.

Valley On an Even Keel

Youngstown, Nov. 3.—Steelworks capacity engaged in the district still is 84 per cent. Sheet makers have 95 per cent of hot mill capacity scheduled. Pipe makers are operating at 78 per cent capacity. About 85 per cent of bar mill capacity is busy while tin and strip mills are full.

Niles Stack Being Dismantled

Niles, O., Nov. 3.—Niles blast furnace of the Carnegie Steel Co. is being dismantled, razing having begun Nov. 2. The stack was erected in 1866 by William Ward and was purchased in 1874 by John R. Thomas who operated it for 20 years. In 1900 it was acquired by Carnegie.

Chicago Gets Buffalo Cargo

Chicago, Nov. 3.—Hickman, Williams & Co. have received by water from Buffalo, a cargo of 6000 tons of iron from the Donner Steel Co. and this has been unloaded by magnet at South Chicago. It is understood this is the only lake cargo of iron contemplated between Buffalo and Chicago. This shipment is the first iron to be received by water at Chicago since 1923.

Motor Manufacturers to Standardize

Washington, Nov. 3.—About 100 to 150 executives of the motor truck companies and leading parts manufacturers comprising the Motor Truck Industries, Inc., will meet here Nov. 11-12 for consideration of a standardization program. Plans are being prepared to consider four sizes of truck chassis to replace the wide range of sizes now made.

Grants Lower Southern Iron Rate

Washington, Nov. 3.—The interstate commerce commission today granted lower rates on pig iron in carloads from points in Alabama, Tennessee, Kentucky, Virginia, to Kansas City and St. Louis, and Ohio river crossings and intermediate points. The Birmingham to Cincinnati rate now is 36 cents lower; the Birmingham to St. Louis rate, 75 cents lower. Producers at Granite City, Ill., Chicago and Cleveland district had opposed the change in rates.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	39.30 to 40.30
Chicago	35.00 to 37.00
Forging, Pittsburgh	40.00
Forging, Philadelph'a	44.20 to 45.30

SHEET BARS

Pittsburgh	$35.00
Youngstown	35.00

SLABS

Pittsburgh	$35.00
Youngstown	35.00

WIRE RODS

¼-inch and finer

Pittsburgh	$45.00
Cleveland	45.00
Chicago	47.00

Standard extras, $2.50 per ton over ⅝-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.80c to 1.90c
Universal skelp, Pittsburgh	1.80c to 1.90c
Sheared skelp, Pittsburgh	1.80c to 1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	2.02c to 2.32c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.80c to 1.90c
Philadelphia	1.92c to 2.02c
New York	1.94c to 2.04c
Chicago	2.10c
Cleveland	1.99c to 2.09c
Birmingham	1.95c to 2.05c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c
Pittsburgh, cold finishing	2.15c to 2.25c
Pittsburgh, forging quality	2.15c to 2.25c
Philadelphia, soft steel	2.22c to 2.32c
New York, soft steel	2.24c to 2.34c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c to 2.10c
Mill, rail steel	1.80c to 1.90c
Philadelphia, common iron	2.12c to 2.22c
New York, common iron	2.14c to 2.24c
Chicago, common iron	1.90c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Hot rolled strip steel, Pittsburgh stamping quality	2.50c to 2.50c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.90c
Worcester, Mass., Chicago	4.05c to 4.15c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.50c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300 (3½ per cent nickel)	4.60c to 4.75c
3100 (Nickel chromium)	3.60c to 3.65c
6100 (Chrome vanadium)	4.40c to 4.50c
6100 (Chrome vanad. spring)	3.85c to 4.00c
9255 (Silico-mang. spring)	3.30c to 3.40c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar prices; under 4 x 4 to 2½ x 2½-inch $5 higher. Chicago base $2 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill	1.60c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16-inch and smaller, Pitts	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Pittsburgh	2.35c
Tie plates, Chicago	2.35c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base	
Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c
Coated nails, count keg	1.80c to 1.85c
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts	$20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there: Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No 28, Pittsburgh base	3.15c to 3.25c
No. 28, Philadelph'a, del'vered	3.57c
No. 28, Gary, Indiana Harbor	3.35c
No. 28, Chicago, delivered	3.40c

TIN MILL, BLACK

No. 28, Pittsburgh	3.15c to 3.25c
No. 28, Gary base	3.35c to 3.40c

GALVANIZED

No. 28, Pittsburgh base	4.40c to 4.50c
No. 28, Philadelphia, delivered	4.62c to 4.32c
No. 28, Gary, Indiana Harbor	4.60c
No. 28, Chicago, delivered	4.65c

BLUE ANNEALED

No. 10, Pittsburgh base	2.30c to 2.40c
No. 10, Philadelph'a, delivered	2.62c to 2.72c
No. 10, Gary, Indiana Harbor	2.50c
No. 10, Chicago, delivered	2.55c

AUTOMOBILE SHEETS

No. 22, Pittsburgh base	4.40c

Tin Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$5.50

Gary, Ind. base 10 cents higher.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$54.20
Six-inch and over, Chicago	50.20
Four-inch, Birmingham	46.00 to 47.00
Six-inch and over, Birmingham	42.00 to 43.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅝ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅝ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
*Flat and round head stove bolts	80, 10 and 5 off
Tap bolts	80 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off

*Stove bolts 80, 10 and 5 off plus 2½ in bulk.

Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	*6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89 00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.60c
Structural rivets, carloads, Chicago	2.75c
**Rivets, 7/16-in. and smaller Pittsburgh, Cleveland	70, 10 and 5 off
**Rivets, 7/16 in. and smaller Chicago	70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chi. dist	$6.30 to 6.40 off
Wrought c.l., Pitts dist	6.25 off
Lock Washers, f.o.b. factory	85 off

Pig Iron

Upward Price Trend Fails To Check Buying —20,000 Tons of Foreign Iron Sold—More Activity Shown in Basic

PIG iron prices have made additional progress upward, although the advance is less pronounced and less general than a week ago. The valley and Buffalo markets are quotable at $20, base, furnace, for this year, and $21 for first quarter. Eastern Pennsylvania iron continues $22.50, while at Chicago some makers are quoting 50 cents higher than a week ago, or $20.50. Several furnace interests are out of the market. The two companies with stacks at Cleveland have withdrawn, and recent sales have been made in the Cleveland district by valley furnaces at $20, base, furnace, or $21.76, delivered. A strong buying movement in moderate size tonnages continues. About 20,000 tons of foreign iron has been sold in the eastern district in the past week.

PITTSBURGH, Nov. 3.—Pig iron continues to show elements of strength. Though last week's minimum quotations are retained on basic, foundry and bessemer until sellers show more unanimity. The Pittsburgh Crucible Steel Co. has banked one of two Midland stacks. The Bethlehem Steel Corp. is out of the market. Two Cleveland companies are out of the market. The Youngstown Sheet & Tube Co. is disinclined to accept much iron business due to continued high fuel costs. The inquiry rate is increasing by leaps and bounds. Some resale iron in hands of scrap dealers and brokers is the only possible factor of weakness. The Sharon Steel Hoop Co. purchased basic from a broker, paying around $19, valley. The National Malleable & Steel Castings Co. still is negotiating for 5000 tons of basic. The Colonial Steel Co. wants 2000 tons. This grade is quoted $19.50 to $20 for prompt delivery and $20 for future shipment. Bessemer iron is active. One sale of 2500 tons brought $20.50. delivery starting immediately. The Mesta Machine Co. exercised an option at $20 for 500 tons. The Mackintosh-Hemphill Co. purchased a similar tonnage at $20.50. Malleable and foundry iron inquiries are coming from far distant points. The Link-Belt Co. wants 3000 tons of malleable. The Warren Tool & Forge Co. is inquiring for 1500 tons, and another user 2000 tons. It is understood the Pressed Steel Car Co. closed for 1000 tons of malleable. Malleable is quoted $20 to $20.50 for prompt and $21 for first quarter.

Average sales prices on basic and bessemer pig iron for October, compiled by W. P. Snyder & Co., show further advances made during the month. The basic average for October is $18.609 compared with $18.27 for September, and $18 for the three months preceding September. The bessemer average for October is $19.74, against $19.28 in September and $19 for the three preceding months.

Boston, Nov. 3.—Eastern pig iron prices have advanced and the market shows greater activity. Sales at Boston total 12,000 to 15,000 tons. One dealer reports having sold a moderate tonnage of continental iron at $23.25 f. o. b. cars Boston. Most eastern Pennsylvania makers have withdrawn first quarter prices pending further developments. A sale of 200 tons of No. 2X, however, is reported at $22 or $25.65 delivered. Buffalo furnaces have nearly all moved up an average of 50 cents a ton during the past week and prices there now range from $20.50 to $21.50.

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$20.50
Bessemer, Pittsburgh	22.26
Basic, valley	19.50 to 20.00
Basic, Pittsburgh	21.26 to 21.76
Basic, Buffalo	19.50 to 20.00
Basic, del., eastern Pa.	22.00 to 23.00
Malleable, valley	20.00 to 21.00
Malleable, Pittsburgh	21.76 to 22.76
Malleable, del., Cleveland	21.76
Malleable, Chicago	22.00 to 22.50
Malleable, Buffalo	20.00 to 21.00
Malleable, del., eastern Pa.	23.75 to 24.75
No. 1X, eastern del., Phila.	24.26 to 25.26
No. 1X, Buffalo	21.00 to 22.00
No. 1 foundry, Chicago	22.50 to 23.00
No. 2 foundry, valley	20.00 to 21.00
No. 2 foundry, Pittsburgh	21.76 to 22.76
No. 2 foundry, Buffalo	20.00 to 21.00
No. 2 foundry, Chicago	22.00 to 22.50
No. 2 foundry, Granite City	23.00 to 23.50
No. 2 foundry, Ironton fur.	21.00
No. 2 foundry, del., Cleveland	21.76
No. 2 foundry, del., Phila.	23.26 to 23.76
No. 2 foundry, N. J., tidewater	24.14 to 24.39
No. 2X, eastern del., Phila.	22.76 to 24.76
No. 2X, east, N. J., tidewater	24.64 to 24.89
No. 2X, eastern del., Boston	25.15 to 26.15
No. 2X, foundry, Buffalo furnace	20.50 to 21.00
No. 2X, Buffalo, del., Boston	25.41 to 26.41
Continental foundry f.o.b. Boston	21.50 to 22.00
India, 2.25 to 2.75 silicon, delivered cars Boston	22.00 to 22.50
No. 2 Alabama, Birmingham	21.00
No. 2 Alabama, Cincinnati	25.05
No. 2 Tenn., Birmingham	20.00
No. 2 Tenn., Cincinnati	24.05
No. 2 southern, Philadelphia	26.01 to 27.01
No. 2 southern, Chicago	26.01 to 27.01
No. 2 southern, Chicago (barge and rail)	**25.18**
No. 2 southern, Boston (rail and water)	25.91 to 26.91
No. 2 southern, Cleveland	26.01 to 27.01
No. 2 southern, St. Louis	25.17 to 26.17
No. 2X, Virginia furnace	22.50 to 23.50
No. 2X, Virginia, Phila.	27.67 to 28.67
No. 2X, Virginia, Jersey City	28.04 to 29.04
No. 2X, Virginia, Boston	28.42 to 29.42
Gray forge, eastern Pa.	22.00 to 22.50
Gray forge, val. del. Pitts.	21.26
Low phos., standard, valley	27.50 to 28.50
Low phos., standard, Phila.	26.79 to 27.75
Low phos., Lebanon, furnace	25.00
*Low phos., English	24.51 to 25.01
Charcoal, Birmingham	30.00 to 32.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $25.50; 6 per cent $26.50; 7 per cent $27.50; 8 per cent $28.50; 9 per cent $30.00; 10 per cent $32.00; 11 per cent $34.00; 12 per cent $36.00; 13 per cent $38.00; and 14 per cent $40.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $34.00; 11 per cent $36.00; 12 per cent $38.00; 13 per cent $40.00; 14 per cent $42.00; 15 per cent $44.50; 16 per cent $47.00; 17 per cent $49.50.

*Duty paid, delivered Philadelphia consumers.

New York, Nov. 3.—Pig iron sales here in the past week totaled about 20,000 tons, mostly from foreign and Buffalo furnaces. The largest buyer was the Central Foundry Co. which took 3000 to 4000 tons. Prices of foreign iron varied, but are uniformly higher. Dutch iron sold at $24, duty paid, tidewater. Indian iron now is $22.50, and continental iron $21.50 to $22. Buffalo iron is $20, base, for this year, and $21 for first quarter. The nominal price of eastern foundry iron is $23, base furnace.

Philadelphia, Nov. 3.—Eastern Pennsylvania pig iron is moving rapidly upward. Fully 10,000 tons of foundry iron was sold in the past week with the last sales at $22.50, base furnace. One maker now is asking $23. All makers hesitate to sell because of the excited coke market, as every $1 advance in coke means $1.20 higher pig iron cost. Over 20,000 tons of foreign foundry iron was sold in this district in the past week at $21 to $23.50, duty paid, involving Indian, English and continental grades. Imported iron now is being sold for first quarter. A pipemaker bought an additional 10,000 tons of foreign iron. Several basic inquiries for this year and one for 7500 tons first quarter are noted. The lowest basic price named in the past week was $22, furnace. Five hundred to 1000 tons of English low phosphorus iron was sold. Sales of copper bearing low phosphorus iron total about 1000 tons. This grade has been advanced to $25, furnace. Ten thousand tons of Virginia foundry iron was sold for first quarter. The Pennsylvania railroad is inquiring for 1500 tons of foundry iron for first quarter.

Buffalo, Nov. 3.—Inquiry for pig iron totals around 10,000 tons. At least 15,000 tons was booked last week prior to the latest advances in prices. One Buffalo maker now quotes fourth quarter iron at $21, base, and first quarter at $22. Another offers a little fourth quarter tonnage at $20.50. Other leading producers quote $20 for this quarter and $21 for first quarter.

Cleveland, Nov. 3.—The two Cleve-

land blast furnace interests now are out of the market, and a round lot of pig iron has been sold for delivery in Cleveland at $20, base, valley furnace, bringing the delivered price to $21.76. As noted in last week's issue, one local furnace interest blew out its stack on foundry iron, and with some other reported difficulties, this removed it from the active market. The other company is fairly well sold for the first quarter and decided to withdraw. Its last sales were at $21, base, furnace, for Cleveland delivery. Sales by other interests with headquarters here are active. The total tonnage booked by them is around 40,000 tons for the week. The latest sales show the following base prices: $20, valley, for this quarter and $21 for first quarter, and the same levels at Buffalo. One lake furnace has taken

(*Concluded on Page* 1181)

Ferroalloys

Pittsburgh, Nov. 3.—Interest in future supplies of ferroalloys is increasing and consumers are becoming more anxious to contract. No deviations are noted in the price of ferromanganese, $115, seaboard. Spiegeleisen users are almost all under contract for first quarter or first half, considerable selling having been done in the past week or two. This business has been transacted at the new figures which for small amounts are $33 to $34 on the 19 to 21 per cent material, the maximum applying to single carloads. Spiegeleisen is growing scarce. On 50 per cent ferrosilicon, $85 freight allowed, is quoted for prompt on first half. Other alloys are quiet.

Special ferroalloys are unchanged in prices. Ferrotungsten continues to vary from $1.05 to $1.15. Wolframite is around $11.75 a short ton unit. Most asking prices are higher but on account of a good quantity on hand it is understood this price can be shaded.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$115.00
Ferromanganese delivered Pittsburgh	119.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	34.00
Ferrosilicon, 50 per cent contract freight allowed	85.00
Ferrotungsten standard, cents per pound contained	1.05 to 1.10
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 3.90
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent material)	122.50

†Duty paid

Coke

Beehive Prices Show Less Strength as Surplus Develops—By-Product Fuel Goes Higher

WHILE by-product coke prices have been advanced again in several districts, the Connellsville market is a shade easier, due to warmer weather, surpluses and greater use of bituminous as substitute for anthracite coal. Standard furnace coke is $8, against $8.50 to $9.75 a week ago, although $8.25 to $8.50 is obtainable on small lots.

Pittsburgh, Nov. 3.—Most sales of Connellsville beehive coke in the past few days carried $8 for the standard furnace grade, although $8.25 and $8.50 still are obtained on small quantities in some districts. Several sales involve 25 or 50 carloads, and such orders are more numerous. Intsead of it being easy to obtain $9.50 for crushed coke as a week ago, makers encountered some reluctance of buyers to pay even $9. Eastern demand is less insistent. Various causes are assigned, chiefly yard and pier surpluses, slightly warmer weather and and the fact that some consumers are trying bituminous as anthracite substitute. Blast furnaces continue intermittent efforts to obtain coke. Consumers and sellers' price ideas for first quarter still are far apart. The former offer $4.50 or $5 and the latter are quoting $8 and higher. One or two furances are striving to arrive at some middle ground upon filling in tonnages. One Martinsburg W. Va. limeworks wants 2500 tons monthly. Activity in foundry coke consists of deliveries against $4 and $5 contracts. A few prompt sales are noted at $8.50 to $9. Some additional interest has been aroused regarding future requirements.

Production of coke in the Connellsville region for the week ended Oct. 24 was 158,280 tons, compared with 143,440 tons the preceding week, according to the *Connellsville Courier*.

Boston, Nov. 3.—Demand for foundry grades of by-product coke is urgent and prices have been advanced in New England to $12.50, delivered. Domestic grades also have been marked up.

New York, Nov. 3.—Beehive coke prices vary from $8 to $12, Connellsville. Practically all sales are for domestic use. By-product foundry coke has been advanced to $9.50, ovens, or $10.34, delivered at Newark and other northern New Jersey points.

Philadelphia, Nov. 3.—Several cars of coke have been sold to a local foundry at $6.50, Connellsville, as a special favor. Sales for household purposes are noted at $8 to $10 ovens. Terre Haute maker also has advanced its price accordingly. The Ashland By-Product Coke Co. has announced the price of its foundry grade at $10, delivered Cincinnati, for shipment this month. Demand continues unabated for all grades. The Domhoff & Joyce Co., has opened books on first quarter foundry coke.

Detroit, Nov. 3.—Demand for foundry coke continues strong with the market firm at $9.50 per ton. Demand for domestic coke is increasing and large tonnages are being moved.

St. Louis, Nov. 3.—Demand for coke continues active, with available supplies less plentiful than heretofore, and prices strong. Users of foundry coke have suddenly evinced extraordinary interest in supplies. One by-product maker has sold out completely while another is apportioning saleable tonnage so as to satisfy actual needs of its customers. By-product plants are operating at capacity. Demand for furnace coke is brisk.

Birmingham, Ala., Nov. 3.—The coke market in the Birmingham district is so active that every ton is in demand, and consumers are urging delivery. Quotations on the foundry grade are firm at $6 to $6.50. Efforts are being made to bring about greater production. Eastern and western inquiries for sized and washed coke, with a few sales already made, indicate that southern coke is to find a market where fuel is scarce.

Detroit, Nov. 3.—Members of the Employers' association report an increase of 71,903 employes for the week ending Oct. 27 over the corresponding week of last year. The number of employes reported by the firms, which include two-thirds of the factory workers in the city, was 266,748. This is an increase of 495 over the previous week.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville, foundry	$8.50 to 9.50
Connellsville, furnace	8.00 to 8.50
New River foundry	7.50
New River furnace	6.00
Wise county furnace	4.50 to 5.00
Wise county foundry	5.00 to 6.00
Alabama foundry	6.00 to 6.50
Alabama furnace	5.50 to 6.00

By-Product

Foundry, Newark, N. J.; del.	$10.34
Foundry, Chicago, ovens	10.25
Foundry, New England, del.	12.50
Foundry, St. Louis	10.00
Foundry, Granite City, Ill	10.00
Foundry, Birmingham	5.75 to 6.00

Plates

Vessel Demands Bring Out Larger Tonnages—Tank and Car Orders Involve 55,000 Tons

INCREASED demand for plates for vessel construction is the feature of the market this week. Twenty-thousand tons of plates are involved in oil storage tank inquiries at Chicago, and Chicago makers have taken 35,000 tons for Frisco cars. The market continues 1.80c to 1.85c, Pittsburgh. In the East 1.60c to 1.65c, Pittsburgh, have applied.

PLATE PRICES, PAGE 1166

Philadelphia, Nov. 3.—More vessel inquiries than usual feature the plate market. Delaware river yards are bidding for two, involving 3500 tons of steel each; one requiring 1500 tons; another 800 tons, and another 250 tons. Plate prices are softer. The usual range is 1.60c to 1.65c, Pittsburgh. The volume of demand is somewhat smaller, few large tonnages being noted.

New York, Nov. 3.—The Newport News Shipbuilding & Dry Dock Co. has booked two Clyde liners, involving 3000 tons of steel, and one International Mercantile liner requiring 6000 tons of steel, the larger share of which is plates.

Pittsburgh, Nov. 3.—While most of the inquiries for plates as well as specifications against contracts coming in involve but 50 to 150 tons at a time for various purposes, occasionally a larger tonnage comes up. The largest pending now is one lot of 1500 tons for barges for a local coal company. Against the low prices appearing in the East, quotations in and around Pittsburgh are 1.80c to 1.85c minimum. One valley producer is quoting 1.85c in Pittsburgh proper and 1.80c in vicinity.

Chicago, Nov. 3.—Pending inquiry for oil storage tanks for the Southwest and Pacific coast totals 20,000 tons. Proposed gas holders at an unstated Central Pennsylvania city and Allentown, Pa., require 3000 tons each; at Lawrence, Mass., and Toronto, Ont., 1500 tons each, and at Taunton, Mass., 1000 tons. Local makers will receive 35,000 tons of finished steel, mostly plates, for the Frisco car order and 6000 tons for Great Northern underframes. Heavy structural awards have embraced a big tonnage of plates and plate delivery has become considerably deferred. The market on plates is 2.10c, Chicago.

Cleveland, Nov. 3.—Another lake vessel project requiring about 5000 tons came up on inquiry the past week. The Otis Steel Co. has taken considerable tonnage for 35 locomotives recently awarded the Lima Locomotive Works by the Hocking Valley and New York Central roads. Some of the quality plates went to an eastern mill. The general run of buying is well sustained. Prices show more firmness in that more smaller sales are being made at 1.90c, Pittsburgh or 2.09c, Cleveland, although 1.80c, Pittsburgh still is obtainable on desirable business.

Boston, Nov. 3.—New low prices have developed in the plate market at Boston during the week. A sale of 200 tons at 1.65c Pittsburgh or 2.015c delivered was negotiated, and there are rumors of even lower levels. Despite this fact total sales show an improvement. Some new tonnage will come out as soon as it is thought rock bottom has been reached.

CONTRACTS PLACED

2600 tons, Marlin Oil Co., Kansas City, Mo., miscellaneous small tanks, to the Graver Corp.

500 tons, plates and shapes for lock gates, dams 46 and 49 Ohio river, Louisville, Ky., to the Independent Bridge Co.

100 tons, miscellaneous work for the J. E. Moss Iron Works, to be fabricated by the Pittsburgh-Des Moines Steel Co.

CONTRACTS PENDING

1500 tons, ten river barges for the Hillman Coal & Coke Co., Pittsburgh; bids being taken.

250 tons, two barges for the United States engineers, Portland, Ore.; bids close Nov. 12.

200 tons, 15-ton steel derrick boat, United States engineers, Milwaukee; bids close Nov. 16.

Semifinished

Valley Mills Return to $35 on Sheet Bars, Billets and Slabs —Market Stronger

THE dip in semifinished steel prices apparently did not extend far beyond valley mills, and did not continue for long. Those valley mills that took contracts recently at $33.50 for sheet bars and $32.50 for billets and slabs are back on a basis of $35. Pittsburgh mills continue to book all three grades at $35; a price of $33.50 Pittsburgh, rumored in some instances, was not a factor.

SEMIFINISHED STEEL PRICES, PAGE 1166

Youngstown, O., Nov. 3.—Last Friday semifinished producers in this district advanced sheet bars $1.50 a ton to $35 Youngstown and slab and standard billets $2.50 a ton to $35 Youngstown. Earlier in the week two sales of sheet bars involving a few hundred tons were negotiated at $33.50, Youngstown. This figure also has applied on all sheet bar contracts closed with district makers during October. Available semifinished tonnage for this quarter is in the hands of one producer. Consumers of semifinished have not opened negotiations for first quarter tonnages nor have makers yet determined the price to apply on 1926 shipments.

Philadelphia, Nov. 3.—Billet sales are small at $34 to $35, Pittsburgh, for rerolled and $39 to $40 for forging quality. Slabs have sold around $35, Pittsburgh.

Pittsburgh, Nov. 3.—Semifinished steel sellers here appear to have weathered the storm of protest against their quotations of $35 on 4 x 4-inch rerolling billets, slabs and sheet bars. While deals have been closed at private figures, these foregoing quotations have been named right along on any business that has come up. Some makers have lost some tonnage because they adhered to these figures. All now are understood to be firm at $35 on the three products. While no sheet bar negotiations are under way, possibly 8000 to 10,000 tons of billet and slab business soon will be closed in lots of 1000, 2000 or 3000 tons at a time. One deal is pending for 1000 or 3000 tons of 4 x 4-inch rerolling billets, depending upon whether the steelmaker will accept one month's business or three; $35 is the quoted price plus extras including an extra for large crop ends. Specifications against $40 forging billet contracts are liberal, the demand being heavy. While some customers are protesting against the $45 wire rod price, that figure holds firm. Specifications have been fairly numerous from makers of automobile sheets as well as other users. Skelp is inactive at 1.80c to 1.90c.

Chicago, Nov. 3.—A maker of billets is quoting $37, base Chicago, on 4 x 4, giving the market a spread of $35 to $37.

The latest data sheets issued for the American Society for Steel Treating handbook cover the subject of "Corrosion of Iron and Steel" and were prepared by T. S. Fuller, research laboratory, General Electric Co., Schenectady, N. Y. These sheets are numbered from A-45 to A-50.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	13.00 to 14.00
Boston (dealers)	12.50 to 13.00
Buffalo	18.00 to 19.00
Chicago	16.00 to 16.25
Cincinnati (dealers)	14.00 to 14.50
Cleveland	17.75 to 18.00
Detroit	15.00 to 15.50
Eastern Pennsylvania	17.00 to 17.50
Bethlehem delivery	16.50 to 17.00
New York (dealers)	12.50 to 13.00
Pittsburgh	19.00 to 20.00
St. Louis	16.25 to 16.75
Valleys	18.50 to 19.00

COMPRESSED SHEETS

Buffalo	16.75 to 17.25
Chicago	14.00 to 14.50
Cleveland	15.00 to 15.25
Detroit	13.00 to 13.50
Pittsburgh	18.00 to 18.50
Valleys	17.25 to 17.75

BUNDLED SHEETS

Buffalo	14.50 to 15.00
Cincinnati (dealers)	10.00 to 10.50
Cleveland	12.50 to 12.75
Eastern Pennsylvania	15.00
Pittsburgh	17.00 to 17.50
St. Louis	10.25 to 10.75
Valleys	15.25 to 15.75

SHEET CLIPPINGS, LOOSE

Chicago	9.00 to 9.50
Cincinnati	10.00 to 10.50
Detroit	10.00 to 10.50

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Buffalo	19.50 to 20.00
Chicago	19.75 to 20.25
Cincinnati (dealers)	17.50 to 18.00
Cleveland (over 6 ft.)	16.75 to 17.00
Detroit	17.00 to 17.50
St. Louis	18.50 to 19.00

STOVE PLATE

Birmingham	13.00 to 14.00
Boston (consumers)	14.00 to 14.50
Buffalo	15.00 to 15.50
Chicago	17.00 to 17.50
Cincinnati (dealers)	10.50 to 11.00
Cleveland	13.75 to 14.00
Detroit (net tons)	13.25 to 13.75
Eastern Pennsylvania	15.00
New York (dealers)	10.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo	20.50 to 21.00
Cincinnati (dealers)	15.00 to 15.50
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	24.00 to 24.50

SHOVELING STEEL

Chicago	15.75 to 16.25
Pittsburgh	15.25 to 15.75
St. Louis	16.00 to 16.50

KNUCKLES, COUPLERS, SPRINGS

Chicago	19.00 to 19.50
Eastern Pennsylvania	20.50 to 21.50
Pittsburgh	22.00 to 22.50
St. Louis	17.50 to 18.00

FROGS, SWITCHES, GUARDS

Chicago	18.25 to 18.75
Eastern Pennsylvania	17.00 to 17.50
St. Louis	18.50 to 19.00

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	19.50 to 20.00
St. Louis	17.25 to 17.75

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	12.00 to 13.00
Boston (dealers)	13.50 to 14.00
Buffalo, No. 1	15.75 to 16.25
Buffalo, No. 2	18.00 to 18.50
Chicago, No. 1	17.50 to 18.00
Chicago, No. 2	16.00 to 16.25
Cincinnati, No. 1 (dealers)	10.50 to 11.00
Cleveland, No. 1	13.75 to 14.25
Eastern Pennsylvania	18.50 to 19.00
New York, No. 1 (dealers)	15.00 to 16.00
Pittsburgh, No. 1	15.50 to 16.00
Pittsburgh, No. 2	19.00 to 20.00
St. Louis, No. 1	15.00 to 15.50
St. Louis, No. 2	16.00 to 16.50

WROUGHT PIPE

Boston (dealers)	11.50 to 12.00
Buffalo	15.00 to 15.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	12.50 to 13.00

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	17.00 to 17.50

BUSHELING

Buffalo	16.00 to 16.50
Chicago, No. 1	14.00 to 14.50
Chicago, No. 2	10.00 to 10.50
Cincinnati, No. 1 (dealers)	13.50 to 14.00
Cleveland, No. 1	14.75 to 15.00
Cleveland, No. 2	14.25 to 14.50
Eastern Pennsylvania	14.00 to 15.00
Pittsburgh, No. 1	16.50 to 17.00
St. Louis, No. 1	14.25 to 14.75

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston (chemical)	9.50 to 9.75
Buffalo	12.50 to 13.00
Chicago	9.00 to 9.50
Cincinnati (dealers)	10.00 to 10.50
Cleveland	13.75 to 14.00
Detroit	11.00 to 11.50
Eastern Pennsylvania	15.00
New York (dealers)	10.00 to 10.50
Pittsburgh	14.50 to 15.00
St. Louis	10.00 to 10.50
Valleys	12.50 to 13.00

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	7.00 to 8.00
Boston (chemical)	11.50 to 12.00
Boston (dealers)	9.00 to 9.50
Buffalo	13.00 to 13.50
Chicago	13.00 to 13.50
Cincinnati (dealers)	10.00 to 10.50
Cleveland	14.75 to 15.25
Detroit	11.50 to 12.00
Eastern Pennsylvania	14.00 to 14.50
Eastern Pennsylvania (chem.)	16.50 to 17.00
New York (dealers)	10.00 to 10.50
Pittsburgh	15.25 to 15.75
St. Louis	13.00 to 13.50
Valleys	13.50 to 13.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	9.00 to 9.50
Buffalo	12.50 to 13.00
Cincinnati (dealers)	10.00 to 10.50
Cleveland	14.75 to 15.00
Detroit	11.50 to 12.00
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	10.00 to 10.50
Pittsburgh	15.25 to 15.75

PIPES AND FLUES

Chicago	12.50 to 13.00
Cincinnati (dealers)	9.00 to 9.50
Cleveland	12.25 to 12.50
St. Louis	13.00 to 13.50

RAILROAD GRATE BARS

Buffalo	14.50 to 14.75
Chicago	16.50 to 17.00
Cleveland	13.75 to 14.00
Eastern Pennsylvania	15.00
New York (dealers)	11.50 to 12.00
St. Louis	13.50 to 14.00

FORGE FLASHINGS

Boston (dealers)	10.00 to 10.50
Buffalo	14.50 to 15.00
Detroit	11.50 to 12.00
Cleveland (under 10 in.)	14.25 to 14.50
Cleveland (over 10 in.)	14.25 to 14.50
Detroit	11.50 to 12.00
Pittsburgh	13.00 to 13.50

FORGE SCRAP

Boston (dealers)	10.00 to 10.50
Chicago	19.00 to 19.50
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	24.00 to 24.50
St. Louis	22.50 to 23.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	9.50 to 10.00
Buffalo	15.00 to 15.50
Chicago	15.00 to 15.50
Cleveland	15.25 to 15.50
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh	17.50 to 18.00
St. Louis	13.50 to 14.00

STEEL CAR AXLES

Birmingham	18.00 to 20.00
Boston (shipping point)	17.50 to 18.00
Buffalo	20.00 to 20.50
Chicago	19.50 to 20.00
Cleveland	18.50 to 18.75
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	22.50 to 23.00
St. Louis	20.00 to 20.50

SHAFTING

Boston (shipping point)	18.50 to 19.00
Chicago	21.25 to 21.75
Eastern Pennsylvania	23.00 to 24.00
New York (dealers)	18.50 to 19.50
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	15.00 to 16.00
Boston (consumers)	17.50 to 18.00
Buffalo, iron	16.00 to 16.50
Buffalo, steel	18.50 to 19.00
Chicago, iron	18.00 to 18.50
Chicago, steel	19.50 to 20.00
Cincinnati	13.50 to 14.00
Eastern Pennsylvania	18.50 to 19.00
New York iron (dealers)	14.00 to 15.00
Pittsburgh, iron	19.00 to 19.50
Pittsburgh steel	21.50 to 22.00
St. Louis, iron	18.00 to 18.50
St. Louis, steel	19.00 to 19.50

NO. 1 CAST SCRAP

Birmingham, cupola	16.00 to 17.00
Boston	19.00 to 19.50
Seattle	18.00
Chicago, No. 1 machinery	20.50 to 21.00
Chicago No. 1 railroad or agricultural	18.75 to 19.25
Cincinnati No. 1 Machinery cupola (net tons dealers)	18.50 to 19.00
Cleveland, cupola	18.00 to 18.50
Detroit (net tons)	15.00 to 15.50
Eastern Pennsylvania, cupola	18.50 to 19.00
New York, cupola (dealers)	15.00 to 15.50
Pittsburgh, cupola	17.50 to 18.00
San Francisco, delivered	20.00 to 21.00
Seattle	18.00
St. Louis, railroad	17.00 to 17.50
St. Louis, agricultural	17.00 to 17.50
St. Louis, machinery	19.50 to 20.00
Valleys	18.00 to 18.50

HEAVY CAST

Boston	16.50 to 17.00
Buffalo (breakable)	16.50 to 17.00
Cleveland	13.25 to 13.75
Detroit (automobile) (net tons)	20.00 to 20.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	14.50 to 15.00
Pittsburgh	17.00 to 17.50

MALLEABLE

Boston, railroad	19.00 to 19.50
Buffalo	19.00 to 19.50
Chicago, agricultural	16.75 to 17.25
Chicago, railroad	19.00 to 19.50
Cincinnati, railroad (dealers)	14.00 to 14.50
Cincinnati, agricultural (dealers)	15.00 to 15.50
Cleveland, agricultural	18.50 to 18.75
Cleveland, railroad	19.50 to 20.00
Detroit	16.00 to 16.50
Eastern Pennsylvania, railroad	17.00
Pittsburgh, railroad	19.50 to 20.00
St. Louis, agricultural	15.00 to 15.50
St. Louis, railroad	16.00 to 16.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	17.50 to 18.00
Boston (dealers)	12.50 to 13.00
Buffalo	17.50 to 18.00
Chicago	19.00 to 19.50
Cleveland	17.25 to 17.50
Eastern Pennsylvania	18.50 to 19.00
New York	15.50 to 16.00
Pittsburgh district	21.00 to 21.50
St. Louis	18.75 to 19.25

LOCOMOTIVE TIRES

Chicago, No. 1	18.00 to 18.50
Chicago, cut	19.50 to 20.00
St. Louis, No. 1	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	18.00 to 18.50
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	21.50 to 22.00

Scrap

Spotty Condition Prevail with Some Elements of Strength—Prices Make Gains

LACK of definite movement in scrap and inability of dealers and consumers to agree on the market keeps buying at a low point, most tonnages being small and for immediate delivery. A few exceptions are noted, especially in the East. Pittsburgh is a strong market, as usual, and this is reflected East and West. Dealers are holding stocks for better prices in most centers.

Chicago, Nov. 3.—For over a month iron and steel scrap dealers have claimed conditions would seem to warrant a higher market and expectation has been for a gain in strength over the quarter. But the market moves only in spots, dealers hesitate to commit themselves, and many quotations are nominal. Considerable heavy melting steel has been on track the past few days and $16.25 is the top known to have been paid. Chiefly because of covering operations or small sales, No. 1 wrought, No. 2 busheling, grate bars, axle turnings, steel wheels and axles, stove plate, steel angle bars and railroad malleable have advanced. Consumers say they cannot buy at what dealers claim is the market, especially stove plate and angle bars. Most sales have been limited to a few carloads.

New York Nov. 3.—Trading in scrap is less active than a week ago but the tone is strong and in some grades prices have been advanced. Turnings, clean cast borings and mixed borings and turnings have been advanced 25 cents a ton, and old steel shafting, 50 cents. Dealers are buying heavy breakable cast for shipment to Florence, N. J., and Harrisburg, Pa., at $13.25 to $14, New York. The advance in borings and turnings follows recent substantial buying by the Bethlehem Steel Co.

Philadelphia, Nov. 3.—Phoenix Iron Co. has covered 5000 tons of bundled sheets, turnings and stove plate, all at $15 delivered. Another consumer has taken a moderate tonnage of stove plate at the same price. Otherwise buying is scattered. Several eastern mills are bidding $17 to $17.25 for heavy melting steel without getting tonnage. Dealers are paying $16.50 for this grade delivered at Bethlehem. Pittsburgh activity is helping support the eastern market.

Pittsburgh, Nov. 3.—The scrap market continues to improve, due to increased buying, shortages of supplies, and the advancing pig iron market. Recognizing a sale of about 1000 tons at $20, heavy melting steel is quoted at $19 to $20. A Weirton, W. Va., user has not paid over $19, but about 25,000 tons have been sold this week at $19 to $19.50 and more than half was at $19.50.

Buffalo, Nov. 3.—Sales of scrap are fair. Heavy melting steel is moving at fractionally lower prices than the highest quoted ten days ago. Some sales have been made within the week at $18 and possibly some at $18.50. Some dealers ask $19 for No. 1 material.

Detroit, Nov. 3.—Iron and steel scrap dealers and consumers appear to be marking time although the market is slightly stronger and prices have stiffened. Orders for new business continue relatively small.

Cincinnati, Nov. 3.—Although new business in the iron and steel scrap market is of small consequence, movement on contracts has slightly increased. Mills in the Portsmouth, O., and Ashland, Ky., districts are specifying more liberally.

Boston, Nov. 3.—Demand for steel scrap in New England is active. Two leading Pennsylvania consumers have advanced bids 50 cents permitting dealers in New England to offer $13 per gross ton shipping point for heavy steel. After being out of the market for several weeks American Steel & Wire Co. at Worcester, again is calling for steel scrap.

St. Louis, Nov. 3.—Prices of iron and steel scrap have advanced on nearly all items, largely due to enthusiasm of dealers. Consumers apparently need tonnage and have sounded out the market recently.

Cleveland, Nov. 3.—Considerable iron and steel scrap is on inquiry in this district and while no large tonnages have been placed in the past week, indications are that a buying movement by consumers is not far distant.

Sheets

Valley and Pittsburgh Mills Raise Prices $2—Full-Finished Unchanged—New Orders Small

SHEET prices generally are $2 higher than a week ago, leading mills now quoting 2.40c, valley, on blue annealed; 3.25c on black and 4.50c on galvanized. Automobile sheets that were advanced to 4.40c, valley, several weeks ago remain at that price. The Steel corporation's advance in the price of galvanized was $4, bringing it to the general level of 4.50c.

SHEET PRICES, PAGE 1166

Youngstown, O., Nov. 3.—Common sheet prices were advanced $2 a ton last week by all district producers. Blue annealed now is quoted 2.40c, black 3.25c and galvanized 4.50. Some producers who have little tonnage available for this quarter are naming 3.25c on black. Most consumers covered requirements during October at 2.25c for blue annealed, 3.10c on black, and 4.20c on galvanized. Little business has been entered at the new prices. Specifications are being released in sufficient volume to afford two or three weeks rolling. Detroit consumers of automobile sheets covered for this quarter's requirement before the price on full finished was advanced $3 a ton to 4.40c, Pittsburgh. These consumers have been issuing blanket orders against this tonnage and urging prompt shipment. There is a fairly good demand for spot tonnage. Consumers are offering 4.25c although little material is available below 4.40c. Sheet mill operation this week continues at 95 per cent.

Philadelphia, Nov. 3.—Seven sheet mills now are asking 2.40c, Pittsburgh, for blue annealed; 3.25c for black and 4.50c for galvanized. The usual figure on blue annealed is 2.30c, with some sales at 2.40c. Black generally is 3.25c, and galvanized 4.30c to 4.50c. One large eastern maker is running full and another at 70 per cent. Most mills refuse to sell for first quarter.

Buffalo, Nov. 3.—Leading sellers of sheets in this district have advanced their quotations to around 3.30c, Pittsburgh, for black and to 4.50c for galvanized. Heavy bookings were made last week. Some sellers have sold as high as six weeks production since Oct. 15. Some large tonnages have been sold to Detroit automobile manufacturers.

Pittsburgh, Nov. 3.—October proved to be a better month in new sheet business booked and in sheet specifications than any other month for more than two years, as far as the American Sheet & Tin Plate Co. is concerned. Some of its branch offices are swamped with orders, and clerical forces are working nights to catch up. Ninety-three per cent of the bookings are in the form of specifications and they are for diversified products, including considerable black, galvanized and blue annealed. Full-finished electrical sheets as well as other grades likewise are being bought. Independent sheetmakers report a heavy buying rate in lots of 50 to 2000 tons at a time, and one or two valley makers are practically out of the market for

the remainder of the year. The Weirton Steel Co., also is in that position. Much of this business is due to the stiffening of market prices during the past two weeks, led by various independent producers. The American Sheet & Tin Plate Co. followed last Saturday with advances which are effective Nov. 2, of $4 on galvanized, to 4.50c; $2 on blue annealed and black to 2.40c and 3.25c, respectively. It left full finished sheets at 4.40c. Sheetmakers are operating at 85 per cent.

Chicago, Nov. 3.—The leading independent sheetmaker has announced a minimum of 4.60c, Indiana Harbor, for galvanized sheets, 3.35c for black and 2.50c for blue annealed and is booking business for delivery over the remainder of the year. The pressure for galvanized and one pass blue annealed is especially strong. Consumers have no stocks. Western sheet mills are operating practically full.

St. Louis, Nov. 2.—Sheet demands from principal consumers have improved. Jobbers also are building up their stocks. Blue annealed sheets, which had lagged somewhat behind other grades, are picking up in activity and strength. There is good inquiry for first quarter, but thus far no sales for that period have been made. On a Chicago basis the leading producer is quoting 2.40c on blue annealed sheets, 3.25c on black and 4.40c on galvanized.

Strip Steel

Price Advance Is Well Maintained on Current Sales

STRIP PRICES, PAGE 1166

Pittsburgh, Nov. 3.—The advance of $3 per ton on cold-rolled strip Oct. 23 appears to be holding firmly at 3.90c, base. Some orders have been taken at the new figure although customers largely were forewarned and are covered at 3.75c. Specifications indicate that consumption is at a high rate generally. Hot strip orders are heavy and 2.30c applies. Average operations are 85 to 90 per cent, and October far exceeded any previous month for many producers here. Fender stock also has been advanced $3 per ton to 5.45c, Pittsburgh and Cleveland for No. 20 gage and heavier and to 5.50c for No. 22 gage.

Tin Plate

Year's Consumption Breaking All Records—Higher Price Rumored

TIN PLATE PRICES, PAGE 1166

Pittsburgh, Nov. 3.—Business in the hands of tin plate producers will enable them to maintain their present operating schedules through the remainder of the year, the average being in the neighborhood of 85 per cent. The American Sheet & Tin Plate Co. is on an 86.3 per cent schedule, around which figure it has sustained operations for some time. It will continue to have five mills idle at various times for the installation of mechanical doublers. Books have not been opened for the first quarter or first half and in some quarters it is expected that the present price of $5.50, which has held all year, will give place to a higher figure. Tin plate consumption this year will exceed the best previous year in history, 1923. Estimates of the packs of peas, corn and tomatoes indicate that the final figures will be between 60,000,000 and 65,000,000 cases. The fish pack this year was larger than usual and the pineapple pack showed further growth.

Pipe

Rising Pig Iron Prices Affect Pipe Quotations—Mill Deliveries Lengthen

ADVANCING pig iron prices are being reflected in firmer quotations on cast iron pipe. Some good tonnages are moving despite seasonal dullness. New York bought 1000 tons last week. Mill deliveries are being deferred on rolled pipe, two to three weeks now being customary. Some mills are running as high as 90 per cent.

PIPE PRICES, PAGE 1166 AND 1204

Pittsburgh, Nov. 3.—Bookings in standard full weight merchant pipe are on the increase, with jobbers filling up their stocks. Instead of the pipe mills being able to ship out a carload order the same day it is received, as was the case a few weeks ago, their stocks which had become depleted in the meantime, will not permit of better than two to three weeks' delivery. In some sizes even more time is required to complete the order. Several large makers still have good backlogs of line pipe business but casing and other oil country goods orders have fallen off perceptibly. Pipe mills continue to operate at 85 per cent of capacity, some being on a 90 per cent or higher rate.

Wrought iron pipe orders in single carloads are numerous, with specifications for two or three carloads or more coming in occasionally. The price is firm at 30 off on 1-inch to 1½-inch buttweld black.

New York, Nov. 3.—Advancing prices in coke and pig iron have given an unusually strong tone to the cast pipe market. While the range is much the same, pipe prices have been advanced in some instances. The Donaldson Iron Works have booked two lots of 500 tons each for the local water department.

Chicago, Nov. 3.—Cast iron pipe prices reflect the rise in pig iron and the booked-up condition of most makers on desired sizes. The market appears quotable at $42, Birmingham, or $50.20, Chicago, on 6-inch and larger pipe and $54.20, Chicago, on 4-inch pipe, with small business having been taken above this level. Order books have lengthened this past week despite the seasonal handicap.

Birmingham, Ala., Nov. 3.—Operation of cast iron pressure pipe plants at capacity continues. Quotations are firm at $42 on 6-inch and over pipe. Soil pipe and fittings are showing a little improvement and production is increasing. Soil pipe prices are steady.

CONTRACTS PLACED

1000 tons, two lots, comprised chiefly of 12 and 20-inch pipe, for the department of water supply, gas and electricity, New York, to the Donaldson Iron Works, through general contractors.

270 tons, Muskegon, Mich., to National Cast Iron Pipe Co.

CONTRACTS PENDING

950 tons, 14-inch pipe for Pleasantville, N. J.; bids in.

700 tons, cast pipe for Newark, N. J.; the Warren Foundry & Pipe Co. low bidder.

Two miles, 8 to 16-inch cast iron and steel pipe, Auburn, Wash.; bids in Nov. 14.

4000 feet, 8-inch cast pipe and water mains, Belrose avenue, Cuyahoga county commissioners, Cleveland; bids in Nov. 14.

4700 feet, 6 and 8-inch cast pipe and mains, Brookview subdivision 3, Cuyahoga county commissioners, Cleveland; bids in Nov. 18.

4800 feet, 6-inch cast pipe and mains, Iroquois avenue and Wilsmere road, Cuyahoga county commissioners, Cleveland; bids in Nov. 18.

7500 feet, 6 and 8-inch cast pipe and mains, Lotus drives and Emery avenue, Cuyahoga county commissioners, Cleveland; bids in Nov. 18.

Bolts, Nuts, Rivets

All Rivet Makers Now on New Level —Bolts Are Unchanged

NUT AND BOLT PRICES, PAGE 1166

Pittsburgh, Nov. 3.—All rivet makers now are quoting 2.60c, which appeared a week ago. Most rivet users are under contract at the old figure, but the new price has applied in connection with several small orders placed the past week. In nuts and

bolts, the condition is much better. Jobbers building starts, and the buying rate has been heavier than for a long time. Prices are unchanged on the basis of 50, 10 and 10 off for large machine bolts.

Chicago, Nov. 3.—November business is opening equal to October, which was the best month of the year, and fourth quarter shipments will doubtless exceed any previous quarter this year. Implement manufacturers are augmenting their specifications. Mill prices are firm on the basis of 50, 10 and 10 off for large machine bolts, and increases in warehouse prices are looked for shortly. Large rivets, which have been quoted at 2.60c, Chicago, are now at 2.75c. Small rivets are unchanged at 70, 10 and 5 off.

Cleveland, Nov. 3.—Specifications on bolts, nuts and rivets are increasing and prices are firm. The leading rivet interest is well booked, many contracts having been made before the recent advance from 2.50c to 2.60c, base Pittsburgh. Bolts and nuts are being taken at a good rate by implement makers, the railroads, jobbers and general consumers.

Iron Ore

Market Quiet—Mines Closing—Lake Shipments 53,000,000 Tons

Cleveland, Nov. 3.—Iron ore mine operations on the Mesabi range have been practically suspended for the season, and elsewhere in the Lake Superior district mining at open pits will be stopped at the end of this week, according to producers whose headquarters are here. The season's shipping orders are nearly filled, and weather conditions are opposed to open pit mining. Underground operations will continue at present rate of activity for a week or two. Demand in the market here consists of small lots. Shipments by lake in October totaled 7,004,443 tons, and the movement for the season to Nov. 1 is 49,816,469 tons. November lake shipments will be about half those of October, bringing the lake tonnage to around 53,300,000.

Japan Buys Equipment

Washington, Nov. 3.—Additional orders for electric power generating equipment were placed in October with American manufacturers by Japan, according to a cable to the department of commerce from Acting Commercial Attache Calder, at Tokio. Radio sales also have been active with the beginning of cooler weather. The Japanese government is encouraging the purchase of articles of domestic manufacture in all lines. Necessary equipment for power and industrial plants, together with specialties, which cannot be manufactured satisfactorily in Japan, doubtless will continue to be in demand.

Bars

Specifications and Orders Continue Heavy and Prices Are Firm

WHILE other steel markets are gaining some strength soft steel bars lead week after week. Mills are taking more tonnage in new business than is being shipped and deliveries are receding. Such stocks as were in hand recently have been nearly depleted and consumers find difficulty in obtaining current needs. Prices remain firm.

BAR PRICES, PAGE 1166

Chicago, Nov. 3.—Specifications and bookings continue to outweigh shipments of soft steel bars sufficiently to extend deliveries further. In some instances consumers' requirements have increased sharply and the pressure is passed along to mills. Implement manufacturers are supplementing their fourth quarter contracts. Specifications from the automobile industry are as heavy as at any time this year. Retail demand for automobiles has declined but dealers will buy heavily for stock the next 60 days. Warehouses are building up their supplies. Soft steel bars are firm at 2.10c, Chicago.

The bar iron market displays a slight degree of improvement both in price and tonnage, but 1.90c, Chicago, still is apt as a single price. Rail steel bars also are firmer, but 2.00c to 2.10c, Chicago, still covers most sales. Double turn operations are the rule.

Philadelphia, Nov. 3.—Demand for soft steel bars is quiet and prices are unchanged at 1.90c to 2.00c, Pittsburgh. Iron bars are quoted at 1.80c. Several first quarter steel bar contracts have been closed at 2.00c but the general disposition is to refuse to quote beyond the end of the year.

Buffalo, Nov. 3.—Bar sales have increased to a substantial extent since Oct. 15. Mill operation has increased 50 per cent in some instances. The price, while unchanged at 2.265c, Buffalo, is firm.

Pittsburgh, Nov. 3.—Merchant steel bar specifications led in October, in the experience of several large producers. One Pennsylvania steel interest reports the improvement over any preceding month of 1925 was between 10 and 15 per cent, and the percentage of betterment over September is even greater. While many fourth quarter contract customers are being shipped material on orders at a lower figure, 2.00c is the firm price. Mill deliveries are more deferred. On some sizes two or three weeks are needed but mill stocks are becoming depleted. On other sizes, five weeks or more are required and on one or two sizes some mills are practically out of the market for the remainder of the year.

Cleveland, Nov. 3.—Bar tonnage has continued to run heavy with local mill offices. For some of them, the October tonnage was the heaviest of the year. With others, it was slightly less than January or February. In all cases it was large and shows no present diminution. Tonnage remains exceedingly diversified. Forward buying still is lacking but consumers are more intent in seeing that they are well covered to the year-end. Mill deliveries have fallen back further. Prices are firm at 2.19c, Cleveland or 2.00c, Pittsburgh.

Boston, Nov. 3.—A leading interest reports bar sales during the week 10 per cent heavier than for the previous week and all at 2.00c Pittsburgh or 2.365c delivered. Some sales have been made at 1.95c. Inquiry for first quarter is more active but eastern mills seem reluctant to quote for that delivery.

Cold Finished Steel

Quotations Advanced $2 Per Ton—Late Buyers To Pay Higher

Pittsburgh, Nov. 3.—Effective yesterday, cold finished bar makers raised their price $2 per ton, going to 2.50c, Pittsburgh. They are operating on approximately an 80 per cent schedule and while many users, including automotive, have contracted for fourth quarter at the old figure, many buyers will pay the new price. October was the largest month of the year in bookings, production and shipments. Another advance is expected before the year ends.

Hoops and Bands

Makers Sold for Year and First Quarter Books Not Open

HOOP PRICES, PAGE 1166

Pittsburgh, Nov. 3.—Most hoop and band makers are sold ahead on hoops and bands and in spite of practically 100 per cent operations are out of the market until the first of next year. Books have not been opened for first quarter and the present figure of 2.50c which is steadily maintained, is expected to give place to a higher price for that period. Various users are represented among the buyers.

Structural Shapes

Activity Maintained, Awards Continue Numerous—Inquiries Fall Off Slightly—Fabricated Prices Gain Strength

ACTIVITY in the structural market is maintained at the high rate of the past few months. Although awards are somewhat less numerous good tonnages continue in the market. The largest award of the week is a 5700-ton office building in New York. A bridge in Pittsburgh, requiring 10,000 tons, is to be placed this week. Three office building projects in the Chicago district aggregate requirements of 30,000 tons. A record building year is expected if November and December equal the buying of October.

Prices of structural steel fabricated and erected have stiffened in the East. Mill prices show little change, the general market improvement not being reflected as yet in plain material.

STRUCTURAL SHAPE PRICES, PAGE 1166

New York, Nov. 3.—Structural activity is well maintained, with trading so far this year well surpassing the record rate of last year. One of the larger recent awards involves 5700 tons for an office building at 150 William street. Shape prices are unchanged, but the tone is decidedly stronger; fabricated material is advancing. In addition to the business reported, a substantial tonnage has been placed, but details are not yet available.

Boston, Nov. 3.—A large volume of small tonnage structural sales is reported in New England by eastern makers. Prices on fully 90 per cent of the tonnage have been 1.90c Pittsburgh or 2.265c delivered. One or two sales are reported at 1.85c Pittsburgh.

Philadelphia, Nov. 3.—Eastern shape mills are operating from 75 to 100 per cent of capacity. The market is keenly competitive, and 1.80c to 2.00c, Pittsburgh, and 1.90c to 2.10c, eastern mills, is being done. Several fabricators are paying even lower. Erected prices now range from $85 to $95 a ton for apartments and lofts, which is several dollars a ton above the recent level.

Pittsburgh, Nov. 3.—The Liberty bridge taking about 10,000 tons, is scheduled for letting this week. Several other smaller jobs have been let and several more are pending, the inquiry rate keeping up remarkably well. Estimating departments are still busy. The mill price still is 1.90c to 2.00c, some fabricators paying only the minimum figure. One or two producers have a 2.00c minimum.

Chicago, Nov. 3.—November structural business is opening at a rate no higher than customary for the month but a continuation of the October record-breaking pace was not expected. Three office building projects, requiring 30,000 tons, are shaping up for early award. Fabricators are comfortably booked over the next 60 days but continue to compete sharply. Plain material is firm at 2.10c, Chicago.

Cleveland, Nov. 3.—Buying of structural shapes continues confined to small tonnages. One fabricator, working overtime to meet bookings, received only one award during October over 100 tons. Inquiries have disappeared on large projects, several pending tonnages being delayed. Plain material prices have stiffened to 2.19c Cleveland or 2.00c Pittsburgh, although 1.90c has not disappeared entirely.

Awards Compared

	Tons
Awards this week	41,094
Awards last week	47,599
Awards two weeks ago	25,861
Awards this week in 1924	27,681
Average weekly awards, Oct.	47,717
Averoge weekly awards, 1925	33,222

CONTRACTS PLACED

5700 tons, office building at 150 Williams street, New York, to the Hay Foundry & Iron Works through Marc Eidlitz.

5500 tons, subway section, New York, to the American Bridge Co., through Chas. Locher, general contractor; 5700 tons for another section, formal contract awarded American Bridge Co.; this latter award was previously reported.

2800 tons, power plant for the American Gas & Electric Co., West Pittston, Pa., to the American Bridge Co.

2400 tons, subway section, New York, to McClintic-Marshall Co., through the Arthur McMullen Contracting Co.

1600 tons, Tishman apartment, Ninetieth street and Park avenue, New York, to Levering & Garrigues Co.

1600 tons, Brooklyn state hospital, Freedmore, L. I., to unnamed fabricators.

1300 tons, apartment, Park avenue and Eightieth street, New York, to the Hinkle Steel Construction Co.

1300 tons, apartment, Ninety-second street and Park avenue, New York, to the Paterson Bridge Co.

1200 tons, Fleetwood hotel in North Carolina, to the J. E. Moss Iron Works.

1200 tons, bridge repair work for the New York Central, to an unnamed fabricator.

1100 tons, apartment 430 East Fifty-seventh street, New York, to the Hinkle Steel Construction Co.

1000 tons, school No. 101, Forest Hills, Long Island, N. Y., to the Harris Structural Steel Co.

1000 tons, office building, Brooklyn, N. Y., to the Hay Foundry & Iron Works.

1000 tons, 15-story apartment, West Ninety-Sixth street, New York, to the Hinkle Steel Construction Co., operating for the Hinkle Iron Works.

1000 tons, paper machine room for Everett Pulp & Paper Co., Everett, Wash., to Minneapolis Steel & Machinery Co., previously reported as involving 432 tons.

800 tons, apartment in West 106th street, New York, to the Taylor-Fichter Steel Construction Co.

750 tons, bridge floors for the New York Central at Chicago, to the McClintic-Marshall Co.

750 tons, United States engineers' building, Louisville, Ky., to American Car & Foundry Co.

700 tons, apartment, 107 West Ninety-third street, New York, to A. E. Norton, Inc.

700 tons, Sulka building, Forty-fifth street, New York, to the Harris Structural Steel Co.

650 tons, apartment, 350 East Fifty-seventh street, New York, to the Taylor-Fichter Steel Construction Co.

650 tons, Marshall Field residence, East Seventieth street, New York, to A. E. Norton, Inc.

600 tons, apartment West Eighty-sixth street, New York, to the Paterson Bridge Co.

600 tons, building for the Standard Seamless Tube Co., Economy, Pa., to the McClintic-Marshall Co.

500 tons, addition to the Mutual Life Insurance Co. building, Baltimore, to the Lehigh Structural Steel Co.

500 tons, Bricken building, 810 Fifth avenue, New York, to Hay Foundry & Iron Works.

500 tons, interior linoleum plant for W. & J. Sloane Co., Trenton, N. J., to Shoemaker Bridge Co.

400 tons, girder spans for the Chesapeake & Ohio railroad in Ohio, to the Virginia Bridge & Iron Co.

400 tons, fertilizer plant, Baltimore, to Lehigh Structural Steel Co., Austin Co. general contractor.

400 tons, Mastbaum building, Philadelphia, to Lehigh Structural Steel Co.

350 tons, Stanley theater, Atlantic City, N. J., to Lehigh Structural Steel Co.

350 tons, oil storage plant for the Palmolive Co., Edgewater, N. J., to an unnamed fabricator.

300 tons, North Side high school, Fort Wayne, Ind., to the Jones & Laughlin Steel Corp.

300 tons, addition to and remodeling of brick works, Hydraulic Pressed Brick Co., Reynoldsville, Pa., to the Bollinger-Andrews Construction Co., Verona, Pa.

250 tons, Pennsylvania bridge repairs at Steubenville, O., to Jones & Laughlin Steel Corp.

250 tons, unstated project, to Palmer Steel Co.

247 tons, gymnasium for Waukegan township high school, Waukegan, Ill., to Midland Structural Steel Co.

200 tons, addition to American Laundry Machinery Co., Norwood, O., to J. E. Moss Iron Works.

200 tons, General Baking Co., Baltimore, to American Bridge Co.

175 tons, high school at New Bedford, Mass., to independent fabricator.

150 tons, theatre, Malden, Mass., to Boston Bridge Works.

150 tons, high school, South Euclid, O., to Consolidated Iron & Steel Mfg. Co.

104 tons, building for Starck Piano Co., Chicago, to Duffin Iron Works.

CONTRACTS PENDING

10,000 tons, Liberty bridge, Pittsburgh; bids in.

7500 tons, 22-story office building for John E. DeWolf, 110 South Dearborn street, Chicago, and associates. Plans by Frank D. Chase, Inc., 720 North Michigan avenue,

Chicago.
6000 tons, theater, Washington, D. C.; bids asked.
2000 tons, buildings at West Point, N. Y., bids asked through the war department.
2000 tons, Vantage bridge, Seattle; bids in Dec. 1.
2000 tons, building for Budd Wheel Co., Detroit; pending.
1500 tons, athletic club, Miami, Fla.; pending.
1500 tons, Walter Mason office building, 19 West Forty-ninth street, New York; pending.
1200 tons, two viaducts for for the Florida East Coast; bids asked.
1200 tons, Eitel apartment building, Chicago; plans by Louis Guenzel, 879 North State street, Chicago.
800 tons, hotel, Greensboro, N. C.; bids asked.
700 tons, hotel, Atlantic City, N. J.; pending.
200 tons, building for the Washington Trust Co., Washington, Pa.; bids asked.
650 tons, bridge for the New York Central railroad in Pennsylvania; pending.
600 tons, Reading bridge, Port Clinton, Pa.; pending.
500 tons, bridge for the Lehigh Valley railroad, Perth Amboy, N. J.; pending.
450 tons, Rothschild office, Camden, N. J.; pending.
400 tons, dye plant and office for Grasselli Chemical Co., at Linden, N. J.; pending.
400 tons, apartment, 241 West Seventieth street, New York; pending.
325 tons, plant addition for Worthington Pump & Machinery Co., Elmwood, O.; bids in.
350 tons, building for the Pittsburgh Crucible Steel Co., Midland, Pa.; bids being taken.
300 tons, miscellaneous repairs and roofs for crane runways, Universal Steel Co., Bridgeville, Pa.; bids being taken.
300 tons, 6-story office building, Asbury Park, N. J.; Whitman & Kahn, New York, architects.
225 tons, Fleetwood Metal Body Co., Fleetwood, Pa.; pending.
200 tons, Mather apartments, Cambridge, Mass.; bids being taken.
200 tons, superstructure, United Gas Improvement Co. building, Philadelphia; pending.
160 tons, Gillette Safety Razor Co. plant handle building, Boston; bids being taken.
100 tons, bank, Danbury, Conn.; pending.
Tonnage unstated, St. Lukes hospital, Cleveland; project again up for consideration.
Tonnage unstated, Breakers hotel, Palm Beach, Fla.; pending.
Tonnage unstated, 20-story loft at 318 Seventh avenue, New York; pending.
Tonnage unstated, loft at Eighth avenue and Thirty-sixth street, New York; pending.

Concrete Bars

Buying Diminishing But Above the Usual Level for the Season—Prices Stiffen

SALES of concrete bars are diminishing in number, but the tonnage being booked by fabricators and mills still is high for the season. Weather interference in building is being felt somewhat, but less than in preceding years. Prices are stiffer. Some jobbers are raising quotations, although mills as yet have made few alterations.

REINFORCING BAR PRICES, PAGE 1166

Chicago, Nov. 3.—One warehouse is pressed to make reinforcing bar deliveries but others are feeling a slight letdown, which is strictly seasonal. It is apparent that considerable pending work will be held over until spring, although the awards this quarter will be comparable to those in previous final quarters. Warehouse stocks of reinforcing bars have been replenished and are heavy. The 1300 tons in the Soldiers' Field stadium may be placed this week. Reinforcing bars are unchanged at 2.60c for billet and 2.00c to 2.10c for rail steel.

Boston, Nov. 3.—October sales of concrete bars at Boston exceeded September by 25 per cent according to a leading interest. Prices while firmer are quoted at 3.00c Boston warehouse.

Buffalo, Nov. 3.—An advance of $2 a ton in the price of reinforcing bars from stock in this district went into effect yesterday. The new price is 2.75c, Buffalo. The price of mill shipment bars is unchanged at 2.265c, Buffalo. There is not much large inquiry pending. Some work that had been planned for this fall has been deferred until next spring because of unusually severe weather in October.

Cleveland, Nov. 3.—With few exceptions awards of concrete bars are confined to lots under 50 tons each. Inquiries have dwindled on small lots as well as large, and the total tonnage pending is smaller. Schirmer O'Hara Co. is low on the general contract for the Willow filtration plant taking 2000 tons. New billet bars have stiffened, the spread now being 2.19c to 2.25c Cleveland instead of 2.19c to 2.20c. Rail steel is steady at 1.80c mill. Bars from stock continue 2.50c Youngstown to 3.10c Cleveland.

Pittsburgh, Nov. 3.—New inquiries keep up fairly well for concrete bars. Awards this past week have been small. New billet bars are unchanged at 2.00c.

Awards Compared

	Tons
Awards this week	3,630
Awards last week	8,940
Awards two weeks ago	5,401
Awards this week in 1924	4,615
Average weekly awards, Oct.	5,973
Average weekly awards, 1925	6,267

CONTRACTS PLACED

700 tons, McCormick Estate building, Chicago, to American System of Reinforcing; Dahl-Stedman Co., 11 South LaSalle street, Chicago, general contractors.
600 tons, Burnham apartment building, Chicago, to American System of Reinforcing; Paschen Bros., 111 West Washington street, Chicago, general contractors.
600 tons, plant for Marietta Safe Cabinet Co., Marietta, O., to Kalman Steel Co.
500 tons, West Suburban hospital, Oak Park, Ill., to Concrete Engineering Co.
200 tons, Packard Motor Car Co. salesroom and service station at Buffalo, to unnamed Buffalo fabricator.
200 tons, schools, Pensauken, N. J., to Concrete Steel Co.
200 tons, apartment, Forty-first and Walnut streets, Philadelphia, to Truscon Steel Co.
170 tons, school building for the Chicago board of education, to Olney J. Dean & Co.; Complete Artificial Stone Co., 3222 Elston avenue, Chicago, general contractor.
160 tons, garage for green cabs, Building Transportation Co., Cleveland, to Paterson-Leitch Co. Rail steel to Franklin Steel Works.
100 tons additional, Buffalo General Electric River road plant, Buffalo, to unnamed Buffalo fabricator.
100 tons, Rudolph Wurlitzer plant, North Tonawanda, N. Y., to Buffalo Steel Co.
100 tons, Topkis factory, Wellington, Pa., to Truscon Steel Co.
Tonnage unstated, for stadium for Lehigh university, Pittsburgh, Pa., donated by Bethlehem Steel Co.

CONTRACTS PENDING

200 tons, plant addition, Gillette Safety Razor Co., Boston, bids being taken.
150 tons, Liberty bridge substructure, Pittsburgh; bids in.
100 tons, Brookline Savings & Trust Co., Brookline, Pa.; bids in.
100 tons, building for the Iron City Sanitary Mfg. Co., Zenienople, Pa.; bids in.
100 tons, building for the Washington Trust Co., Washington, Pa.; bids in.
100 tons, St. Vincents school, Chicago; general contract to William G. McNulty & Sons Co., 58 East Washington street, Chicago.
100 tons, 4-story lodge building for Golden Deeds lodge of Independent Order of Odd Fellows, Chicago; plans by Levy & Klein, West Washington street, Chicago.
Tonnage unstated, 7-story Northmoor apartment building, Chicago, for W. C. Bannerman, 77 West Washington street, Chicago; plans shortly by Christenson & Quinn, 360 North Michigan avenue, Chicago.
Tonnage unstated, 14-story hotel building for Albert A. Schwartz, 720 North Michigan avenue, Chicago; plans shortly.
Tonnage unstated, 4-story top addition to building at 59 West Washington street, Chicago; plans shortly by Holabird & Roche, 104 South Michigan avenue, Chicago.
Tonnage unstated, building for General Banking Co., Baltimore; general contract to C. R. Stockhousen Co.
Tonnage unstated, Vantage bridge job, Seattle; bids in Dec. 1.

Direct Mail Men Meet

Transportation and distribution problems are farther from solution than most phases of industry, according to Homer J. Buckley, president of the Advertising club of Chicago and founder and first president of the Direct Mail Advertising association. Making this statement at the eighth annual international convention of this organization at Boston, he stated: "There is too much distrust and working at cross purposes between different methods of advertising. Direct mail methods are but a corollary and assistance to newspaper and magazine advertising."

An elaborate exhibition featured the meeting, attended by over 3000 delegates. Jerome P. Fleishman of Baltimore spoke on salesmanship ethics, urging that customer's interests be made paramount.

Rails, Cars

More Car Buying in Evidence —1926 Rail Programs Continue To Take Heavy Tonnage

AWARD of 4000 freight cars by the St. Louis-San Francisco has encouraged equipment builders. Lackawanna is inquiring for 2000 and Lehigh Valley for 1000 cars. Rail programs for 1926 continue to take heavy tonnages, Chesapeake & Ohio closing on 30,000 tons and Philadelphia & Reading on 30,000 tons. Pennsylvania's distribution of 160,000 tons is decided but orders not placed.

RAILROAD TRACK MATERIAL PRICES, PAGE 1166

New York, Nov. 3.—Car buying in the East remains restricted, although a fair volume of business is on inquiry. Locomotive inquiry includes ten for the Missouri-Pacific. Among awards are four for the Georgia railroad, to Lima Locomotive Works, Inc., four for the Paulista de Estrada de Ferro, Brazil, five for the Central of Georgia, and one for the Clark & Wilson Lumber Co., all to Baldwin Locomotive Works.

The Norfolk & Western railroad has placed an additional order for 5000 tons of rails, swelling its 1926 total to 50,000 tons. It will buy 43 steel passenger cars and will build 10 mountain type locomotives at its shops, in Roanoke, Va.

Pittsburgh, Nov. 3.—Sustained operations among the coal mines is creating a fair demand for light rails. The price of 1.60c may shortly be advanced.

An increased number of small orders are developing in track fastenings. The demand for small spikes has improved considerably. In addition to the Baltimore & Ohio inquiry involving approximately 17,000 tons of tie plates other roads are about to issue large inquiries. Prices are unchanged on the quoted bases.

Chicago, Nov. 3.—All but 500 of the 4000 freight cars placed by the St. Louis-San Francisco railroad will be built in this district, bringing 35,000 tons of finished steel to local mills. Action is expected any day on 3000 cars by the Missouri Pacific and 700 by the Denver & Rio Grande Western. It is believed the New York Central will expand its inquiry for 2000 cars to 4000. The interstate commerce commission having deferred until January its decision on the Nickel Plate merger, a decision, presumably favorable, is expected before then on the Chesapeake & Ohio's intention of buying 20,000 cars.

The Chesapeake & Ohio has placed 30,000 tons of rails; 12,000 tons each with the Illinois Steel Co. and Inland Steel Co. and 6000 with Bethlehem Steel Co. All of the larger western carriers save the following have either placed their 1926 rails or have tentatively decided upon their tonnages: Alton; Monon; Chicago & Eastern Illinois; Burlington; Wabash; Cotton Belt; Pere Marquette; Nickel Plate and Missouri, Kansas & Texas. The Pennsylvania is understood to have decided on its distribution of 160,000 tons of rails for 1926 delivery, local mills to participate. Orders have not yet been placed. The Inland company has begun the delivery of 30,000 tons of rails to the Great Northern railroad at Duluth by water, an unusual movement. Reading has asked Bethlehem and Carnegie for reservations for 30,000 tons.

Cleveland, Nov. 3.—The Wheeling & Lake Erie has placed 5000 tons of rails for 1926 delivery with the Carnegie Steel Co. Other rail business is in prospect for early action.

ORDERS PLACED

Chicago, Indianapolis & Louisville, 500 underframes, to Pullman Car & Mfg. Co.

Chicago, South Shore & South Bend, four coaches, to the Pullman Car & Mfg. Co., in addition to 25 reported awarded in IRON TRADE REVIEW, Oct. 15.

Chicago, Wilmington & Franklin Coal Co., 25 mine cars, to American Car & Foundry Co.

Great Northern, 1000 underframes to Siems-Stemble Co.

James Hatcher Coal Co., 50 mine cars, to American Car & Foundry Co.

Missouri, Kansas & Texas, 500 box cars, to own shops.

Missouri Pacific, five dining cars, to the Pullman Car & Mfg. Co.

New York, Chicago & St. Louis, 100 steel underframes, to Pennsylvania Car Co.

St. Louis-San Francisco, 4000 cars, distributed as follows: 2000 box cars to American Car & Foundry Co., 500 box cars to General-American Car Corp., 500 automobile cars each to Pullman Car & Mfg. Corp. and Mt. Vernon Car & Mfg. Co., and 500 gondolas to Tennessee Coal, Iron & Railroad Co.

St. Louis-San Francisco, 14 passenger coaches, to American Car & Foundry Co.

ORDERS PENDING

Chinese Government railways, 50 gondolas; pending.

Delaware, Lackawanna & Western, 2 mail frames; pending.

Delaware, Lackawanna & Western; 2000 freight cars; bids expected to be asked.

Lehigh Valley, 1200 freight cars; bids expected to be asked.

Norfolk & Western, 43 steel passenger cars; pending.

Egyptian State railways, 100 tank cars; pending.

Wire

Better Demand Appearing and Production Increases — Prices Are Firmer

WIRE makers have increased production at least 5 per cent in the past two weeks and demand is steadier and larger. Jobbers and consumers alike are buying with more courage. Small spikes are in demand in the East and makers are sold for the year. A sale by a maker of nails in Ohio is to be shipped by the Ohio river on a delivered base. Prices show more firmness.

WIRE PRICES, PAGE 1166

Chicago, Nov. 3.—Demand for wire for the manufacturing trade has been improving. Both jobbers and retailers have been heavy buyers of wire and wire products, practically all of which is going to consumers. Mill stocks have been well reduced and western mills are averaging slightly over 60 per cent operations. Prices are unchanged but firmer on the basis of 2.55c, Chicago, or western mill, for a plain wire and 2.70c for wire nails. The merger of the Keystone, Crawfordsville and Kokomo companies into the Continental Steel & Wire Corp., with a capital of $15,000,000, has been completed and Continental is now the largest independent in this district.

Pittsburgh, Nov. 3.—The wire products industry now is on a 65 to 70 per cent basis, as against less than 60 per cent a few weeks ago. Some nail buyers and distributors expecting an increase in the nail base from 2.65c have been furnishing a fair amount of business. Most orders, however, continue to be from various users of manufacturing wire, chiefly chain makers, who are anticipating a heavy demand this winter for automobile chains. Cement-coated nails generally are quoted at 1.85c although 1.80c has not entirely disappeared.

Philadelphia, Nov. 3.—Shading in nails seems to have disappeared and the market is firm at 2.65 Pittsburgh. Heavy demand has appeared for small spikes from bituminous mines and they are firm at 2.90c Pittsburgh.

Cincinnati, Nov. 3.—The Belfont Steel & Wire Co., Ironton, O., has booked an order for 750 tons of nails from four Cincinnati jobbers. The shipment will be made by water on the basis of $2.65 per keg, river bank delivery. The concerns participating in the purchase are: Kruse Hardware Co., W. F. Robertson Iron & Steel Co., Kruse-Bahlman Hardware Co., and the H. Belmer Co.

Boston, Nov. 3.—Wire nails have improved further in demand at Boston. Prices are firmer. Plain wire holds about level at 2.65c Worcester.

Nonferrous Metals

Prices Advance Rapidly During Past Week As Buying Continues Active In All Lines Largely For Use This Year

Prices of the Week, Cents a Pound

	Copper Electro delivered	Copper Lake delivered	Copper Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
	Cents per pound									
Oct. 28	14.62½	14.75	13.85	63.00	9.60	9.45	8.57½	28.00	19.50	34.00
Oct. 29	14.65	14.75	13.87½	63.90	9.60	9.45	8.60	28.00	20.00	34.00
Oct. 30	14.70	14.83½	13.87½	64.06¼	9.70	9.50	8.75	28.00	20.37½	34.00
Nov. 2	14.75	14.87½	14.00	63.70	9.85	9.65	8.75	28.00	20.50	34.00
Nov. 3	14.87½	14.95	14.00	63.50	9.95	9.70	8.85	28.00	20.50	34.00

NEW YORK, Nov. 3.—Metal prices advanced rapidly during the past week. Copper started up, dipped a little on the news of political crisis in France, and then went up again. Tin went down suddenly and then shot up again. Antimony appeared to be attached to a balloon and lead jumped. Nickel was unchanged, while monel was the only metal to be cut definitely to a lower price.

Domestic buying continues active in all lines, largely for use this year, but with a little interest further ahead in some instances, especially in aluminum, and occasionally in brass and copper products, but not much beyond early December in lead and zinc. Demand and supply situation in all metals here and abroad continues strong. In copper the situation in Europe is not up to par, but some export business has been done, while demand for zinc, lead and tin in Europe continues good, with supplies more limited than in copper.

Zinc—Zinc again is strong after hesitating and appearing a little easy. On Monday the price recovered to 8.75c E. St. Louis for November and some were asking 8.80c for nearby shipment. December prices varied from 8.65c to 8.75c. The buying lately has been domestic, with galvanizers interested mostly in November and smelters well sold for the month. High grade and brass special are well sold farther ahead.

Tin—The tin market is fluctuating just under 65c, with supplies in an unusually tight position, though probably not actually as tight as appears in the statistics. On the other hand users have not been buying actively since prices went high, so that probably their stocks are smaller now than a while ago.

Copper—The red metal is in a strong market, with most large producers well booked for this year. The export market still lags. October sales were unusually large in this country, for delivery over the rest of the year.

Refractories

Improvement Results from More and Larger Orders by Consumers

Pittsburgh, Nov. 3.—During the past two weeks, a gradual improvement has come in refractories in that orders have become more numerous and for larger quantities. Consumers are building up stocks a trifle and producers are able to bring operations to between 80 and 85 per cent. Customers are beginning to make inquiry about first quarter and first half contracts and a large number of chrome brick contracts at $45 have been written for first half. In silica brick, and to a certain extent in fire clay also, some makers have taken orders as protections for part of first quarter requirements. Prices are stiffening on the quoted bases, although no formal advances have been made.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.37½
Copper, hot rolled	23.00
Zinc, ga. 9 to 17	11.75
Lead full sheets (cut ¼c more)	13.25 to 13.75
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	24.00
Copper	25.00
RODS	
High brass (round ⅝ to 2½-inch)	17.12½
Naval brass	19.87½
WIRE	
Copper	16.37½ to 16.62½
High brass	19.87½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.00 to 9.25
Chicago	9.50 to 9.75
Cleveland	**9.25 to 9.50**
HEAVY YELLOW BRASS	
New York	7.00 to 7.25
Chicago	8.25 to 8.50
Cleveland	7.50 to 7.75
ZINC	
New York	5.25
Cleveland	4.50 to 5.00
HEAVY COPPER AND WIRE	
New York	11.25 to 11.50
Chicago	11.50 to 11.75
Cleveland	11.50 to 11.75
RED BRASS TURNINGS	
New York	8.25 to 8.50
Chicago	8.75 to 9.25
Cleveland	8.25 to 9.00
YELLOW BRASS TUBING	
Cleveland	**7.50 to 7.75**
LIGHT COPPER	
New York	9.50 to 10.00
Chicago	10.50 to 10.75
Cleveland	9.75 to 10.00
LIGHT BRASS	
Chicago	7.50 to 8.00
Cleveland	6.00 to 6.25
ALUMINUM	
Borings, Cleveland	11.50 to 12.50
Old sheet and cast, Cleveland	17.00 to 17.50
Clippings, Cleveland	**21.00 to 22.00**

Secondary Metals

Remelt aluminum No. 12	25.00 to 25.50
Brass ingot 85-5-5-5	12.25 to 12.50

Coke By-Products

Some Distillate Prices Higher—Sulphate of Ammonia Easier

New York, Nov. 3.—Tightening in supplies has resulted in an advance in several distillates. Xylol is now holding at 29 cents, works, in tanks, and 34 cents in drums, and solvent naphtha and toluol at 28 cents, works, in tanks, and 33 cents in drums. In all three products, sellers are virtually booked up over the remainder of the year. Benzols, which were advanced a month or so ago, are unchanged at 24 cents, works, in tanks and 29 cents in drums, for pure and 23 cents, in tanks and 28 cents, in drums, for 90 per cent.

Spot sulphate of ammonia is easier at a range of $2.90 to $2.95, delivered. This is a drop of about five points from a week ago. Sulphate for foreign account is nominally unchanged at $2.75 port, in double bags. Trading is featureless with the bulk of production taken up with back contracts.

Seasonal dullness prevails in Naphthalene. However quotations remain around 5½ to 6½ cents for flakes and 6½ to 7½ cents for balls. Phenol also is steady at 28 cents, works. Buying is of a routine character.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.24	.....
Toluol	0.28	.....
Solvent naphtha	0.29	(nominal)
Commercial xylol	0.29	(nominal)
Phenol	0.22	0.22
Per Pound at Producers' Plants		
Naphthalene flakes	0.05½ to 0.05½	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½	0.06½ to 0.07½
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.92½	.....

Resist Government in Industry

Business Leaders Prepare for Conference To Combat Tendencies of Cities, States and Nation To Engage in Construction Work—Fear Spread of Russian System—Taxes Used "Against Private Enterprise"

WASHINGTON, Nov. 3.—Representatives of the iron and steel industry are to attend a conference of all general industries throughout the country in Washington early in December to lay out a campaign to combat the persistent tendency of federal, state, county and municipal governments to engage in lines of business that are the functions of private citizens.

Invitations will be extended through about 224 trade associations and similar business and civic organizations by an executive committee, selected in Washington last week. Members of the iron and steel industry have suggested the name of James B. Bonner of the Carnegie Steel Co., to represent the industry on this executive committee. The American Iron and Steel institute was represented at the conference here last week to map out the preliminary plans and to suggest the executive committee. Twenty-three industries were represented at the preliminary conference.

It is pointed out that government activities, either intentionally or unintentionally have been spreading throughout recent years in such manner as to encroach directly or indirectly upon almost every line of private industry. Aside from the demoralizing economic effects, it is said by those backing the conference that a social problem is involved. Figures are given in which it is shown that at present one out of every 12 persons gainfully employed in the United States is working for the government, often in competition with those outside of the government. In other words, 11 persons gainfully employed are helping to support a twelfth person through their incomes. Private industry, it is argued, is being taxed to support a government which in turn competes in the field of private enterprise.

Since 1918, the appropriations for rivers and harbors work, which is done by the army engineers, have exceeded $50,000,000 each year. The engineer corps has floating equipment to carry on its contractual work, this equipment being valued at $50,000,000 to $60,000,000, or a sum practically equal to the cost of its work. Contractors declare that economic necessity forbids them to maintain equipment that exceeds 20 per cent of the cost of the contract work they undertake.

As regards government construction taking the place of contract work, Secretary of Commerce Hoover says:

"I would like to see an independent investigation into the relative cost of construction of public works, departmentally, as opposed to contracts. I believe that there would be demonstrated a great public waste. It is my own belief, as an engineer, that construction by contract of public works, makes for national economy."

During the war navy yard shops were expanded to such an extent that after hostilities were over, and following the disarmament conference, some of these plants were enabled to take business offered by other government departments, which formerly went to private industries. At various times, with much of their functions eliminated following the limitation of the armaments conference, navy yard plants have been faced with the necessity of reducing their forces. Budget requirements also have necessitated their operations on reduced scales, but even in this situation, the yards have been taking on government work in competition with private concerns which formerly were allotted this business.

Gen. R. C. Marshall Jr., general manager of the Associated General Contractors, is chairman of the committee of five named by the 23 industries here. It is hoped that the general conference to be called in December may arrive at a plan to conduct a campaign of education following the collection of data on government activities in private industry.

A.S.T.M. Committees in Fourth Meet

FOLLOWING the plan of conducting joint meetings of related committees adopted two years ago, the American Society for Testing Materials held its fourth session at the Hotel Cleveland, Cleveland, Oct. 27-29. Some 15 different committees were represented and were attended by about 275 members and guests.

At a dinner served on Tuesday evening, J. H. Gibboney, vice president of the society presented some of the problems which have been under discussion by the committee on promotion of usefulness. He referred particularly to the membership in technical schools and colleges and the importance of keeping these members in touch with activities of the society. At the same time President W. H. Fulweiler discussed various questions before the executive committee and announced that decision had been reached to proceed immediately in the establishment of the Dudley medal and Marbury lecture.

Dr. Charles H. Howe, president of Case School of Applied Science made an address at the dinner on Wednesday evening in which he suggested the society study, possibly through the formation of a committee on engineering education, of educational problems that relate to the training in our technical schools of men who will be equipped properly for work in the field of materials engineering. During the three days of the meeting inspection trips were made to the National Lamp Works, White Motor Co., W. S. Tyler Co., Cleveland Electric Illuminating Co., and National Malleable & Steel Castings Co.

Subcommittee II of A-1 considered a proposal for consolidation of the society's two specifications for structural steel for bridges and structural steel for buildings, but no decision could be reached. The present main difference in the two specifications is

(*Concluded on Page* 1181)

British Market Is Improving

Middlesbrough Pig Iron Sold for Delivery to Germany—Franc's Depreciation Stimulating French Exports—Belgians Book Rail Tonnage for Colombia—Germans Sell Locomotives to Brazil

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Nov. 3.—(*By Cable*)—The outlook this week is brighter, especially in the pig iron market, although prices still are easy. Five hundred tons of Middlesbrough pig iron has been shipped to Germany. French competition in pig iron is being felt by British makers selling to users on the Clyde. Cammell Laird & Co. have booked 440 railroad cars for India. A Nigeria bridge contract has been placed at Staffordshire. Dorman, Long & Co. have obtained a contract for erecting a bridge on the Nile. Demand for galvanized sheets and tin plate again shows improvement. Some mills are booked through March.

Reports from Paris state that the depreciation of the franc is stimulating business. Two-thirds of the orders for semifinished material now being taken by French mills are for export. Substantial tonnages of merchant bars are being sold for shipment to India.

Societe John Cockerill, Belgium, has obtained an order for 2000 tons of rails for Colombia. German interests have taken an order for 67 locomotives for Brazil.

British Steel Market Shows Better Feeling

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Oct. 23. (*European Staff Service*)—The position gives a little more support to optimism than for some time and increased cheerfulness is manifest in all directions. American buying of pig iron came opportunely to give the market the required accession of strength, and it is significant that no further reductions have taken place; signs are not wanting that consumers are watching the market to test whether the time has arrived to place important contracts.

American buying is still a feature.

Sterling $4.84

The tonnage contracted for now exceeds 100,000 tons and much more is in negotiation in the Middlesbrough area. Americans are said to be offering prices low enough to cause hesitation among makers. Probably, however, the prices will be accepted if the buying is on the usual large American scale. In spite of the additional business Middlesbrough No. 3 iron is still at the same basis of £3 6s 6d ($16.09). Hematite is probably a few pence dearer, and it is now stated that the two furnaces put in operation are intended to produce hematite. The price of this continues at £3 14s 6d ($18.03) but with occasional quotations of 6d ($0.12) more, which makers consider ought now to be the standard. Good inroads have been made into stock, and production should now be on the up grade.

Barrow-in-Furness is busier than for some time, with ten furnaces at work instead of seven, which was the number in recent months. Prices so far are unchanged. The most important feature in the situation is that the furnaces are now producing for actual requirement, and stocks are liquidating in all areas. One element

(*Concluded on Page* 1189)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, November 2	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d			Francs		Francs	£ s d	
Foundry No. 3, Silicon 2.50-3.00	$16.13	3 6 6*	$14.89	355	$13.59	330	$16.98	3 10 0
Basic	15.76	3 5 0	16.46	345	14.72	325	15.04	3 2 0
Basic-bessemer	19.16	3 19 0†	16.25	340	14.50	320	16.98	3 10 0
Hematite, Phosphorus 0.02-0.05	17.95	3 14 0	19.50	475	.....	...	19.40	4 0 0
SEMIFINISHED STEEL								
Billets	$26.68	5 10 0	$20.95	500	$21.52	475	$26.68	5 10 0
Wire rods	44.86	9 5 0	27.65	660	27.86	615	29.10	6 0 0
FINISHED STEEL								
Standard rails	$36.38	7 10 0	$26.82	640	$26.27	580	$31.53	6 10 0
Merchant bars	1.57c	7 5 0	1.16c	610	1.15c	560	1.19c	5 8 0
Structural shapes	1.43c	6 12 6	1.08c	570	1.07c	530	1.16c	5 5 0
Plates, ship, bridge and tank	1.57c	7 5 0	1.30c	685	1.30c	635	1.38c	6 5 0
Sheets, black, 24 gage	2.22c	10 5 0	2.22c	1,170	2.32c	1,130	2.64c	12 0 0
Sheets, galvanized, 24 gage, corrugated	3.60c	16 12 6	3.28c	1,725	4.59c	2,240	3.6 c	16 15 0
Bands and strips	2 22c	10 5 0	1.52c	800	1.52c	740	1.65c	7 10 0
Plain wire, base	2 38c	11 0 0	1.73c	910	1.64c	800	1.60c	7 5 0
Galvanized wire, base	3.03c	14 0 0	2.28c	1.200	2.24c	1,100	1.98c	9 0 0
Wire nails, base	3.14c	14 10 0	1.50c	1,000	1.85c	900	2.20c	10 0 0
Tin plate, base box 108 pounds	$ 4.85	1 0 0	.....	....	.....	....	$ 6.55	1 7 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$16.13	3 6 6	$16.46	345(2)	$15.18	335	$19.55	85
Basic pig iron	16.37	3 7 6	13.83	330(1)	14.72	325	20.24	88
Furnace coke	2.79	0 11 6	6.95	142	5.66	125	5.52	24
Billets	27.89	5 15 0	18.44	440	22.20	490	27.60	120
Standard rails	1.73c	8 0 0	1.01c	530	1.08c	525	1.48c	142
Merchant bars	1.62c	7 10 0	1.11c	585	1.19c	580	1.35c	129
Shapes	1.52c	7 0 0	1.00c	500	1.14c	555	1.36c	130
Plates, ship, bridge and tank	1.62c	7 10 0	1.38c	725	1.39c	680	1.51c	145
Sheets, black, 24 gage	2.27c	10 10 0	2.30c	1.210	2.31c	1,125	2.50c	240
Sheets, galvanized, 24 gage, corrugated	3.52c	16 5 0	3.52c	1,850	4.80c	2,340	3.65c	350
Plain wire	2.38c	11 0 0	1.73c	910	1.64c	800	1.56c	150
Bands and Strips	2.22c	10 5 0	1.33c	700	1.44c	700	1.59c	152

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.91) f. o. b. Ferromanganese £15 5s 0d ($73.96) f. o. b German ferromanganese £15 0s 0d ($72.75) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semifinished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg and German are for basic-bessemer steel.

Machinery

October Sales Appear To Be the Best During 1925—Buying Is Well Scattered and in Small Lots—Crane Orders Improve

IN PRACTICALLY every important machine tool district, sales continue to show improvement. From early reports the volume of business done in October appears to be the largest of any month this year. Dealers are well supplied with inquiries and manufacturers are operating at a good rate. No disturbing factors are to be seen in the immediate future. Deliveries are slowing down and a number of manufacturers are taking orders only on a 60 and 90 day basis. Action of the Norfolk & Western railroad still is awaited. Several eastern roads have purchased small lots of tools and several others are in the market. Eaton Axle & Spring Co., Cleveland, recently was reported to have purchased tools heavily, but evidence of orders placed is lacking.

New York, Nov. 3.—Machine tool buying continues to gain. While railroad business still dominates, industrial activity is broadening and encouraging sellers. Two recent orders are for six automatic lathes for Delco Co., New York and two automatics and one centering machine for Chrysler Motor Co., Detroit, all awarded Pratt & Whitney Mfg. Co. Four punches for Lancaster Iron Works, Lancaster, Pa. have been awarded another seller, and a large planer and lathe for Donner Steel Co., Buffalo, were placed with Niles-Bement-Pond Co. Initial action is expected this week on the Norfolk & Western railroad list.

Boston, Nov. 3.—With textile works commencing to buy, a more cheerful aspect is given to the machine tool market. At least four mills bought a total of eight or nine tools the past week, and a Rhode Island manufacturer wants two large special machines. Used tools have been active, several hundred being sold at fair prices in the liquidation of Beeman & Smith Co., Providence, R. I. A leading Boston dealer reports that total tool sales in October were slightly under September. Most machine tool makers in this district however, are busier than they were a month ago, and some are working overtime. Tool prices are firm, and a manufacturer of contractors' equipment has advanced prices approximately 10 per cent.

Pittsburgh, Nov. 3.—Despite a slow machine tool market, a fair number of orders are noted every day or so. Westinghouse Electric & Mfg. Co. has been buying additional items against its recent list, one seller obtaining an order for a turret lathe, radial drill and boring mill. Westinghouse also bought a floor crane for one of its service stations. The Norfolk & Western has changed one or two specifications on its recent large list and is expected to buy shortly. Pittsburgh Crucible Steel Co. is in the market for mill equipment, tables, motors, etc., for Park works and may revamp some of its own crane equipment. Crane orders and new inquiries are both fair.

Cincinnati, Nov. 3.—Machine tool bookings for October surpassed all records for 1925, particularly for builders of planers, boring mills, lathes and milling machines. Used machinery dealers report improved business.

Chicago, Nov. 3.—Selling of machine tools is as heavy as at any time this year. Deliveries are falling behind with six weeks the best on some standard tools. A Rockford, Ill., drill maker is reported booked up for four months and a Milwaukee maker of milling machines through to April. International Harvester Co. has placed two 4-foot radial drills. Both A. O. Smith Corp., Milwaukee, and Nash Motors Co., Kenosha, Wis., continue to place special tools. Rock Island railroad is inquiring for a No. 5 grinder ond the Ashland avenue municipal hydrant repair shop for a 25-inch drill press.

Cleveland, Nov. 3.—Machinery and equipment interests here are enjoying the best business in many months. Some dealers report sales in October to be the best this year, while others found them a close second to those of August. Manufacturers are operating at a good rate. Although officials of the Eaton Axle & Spring Co., Cleveland, give weight to the report that considerable new equipment is being purchased, evidence of orders placed with local sellers is totally lacking.

CRANE ORDERS PLACED

Five electric cranes, two 10-ton and three 5-ton, for Steel Tank & Pipe Co., Berkeley, Calif., to Milwaukee Electric Crane & Mfg. Co.

Four electric cranes, one 50-ton, one 3-yard, one 7½-ton and one 5-ton, for Acme Cement Corp., Catskill, N. Y., placed by McClellan & Junkersfeld, New York, with Whiting Corp.

Two 15-ton electric cranes for Fisher Body Corp., Detroit, to Milwaukee Electric Crane & Mfg. Co.

Two 10-ton cranes for Massillon, O., and Hartford, Conn., works of Union Drawn Steel Co., Beaver Falls, Pa., awarded Shaw Electric Crane Works through Manning, Maxwell & Moore, Inc.

Two 10-ton overhead cranes for Calaveras Cement Co., San Andreas, Calif., to Milwaukee Electric Crane & Mfg. Co.

A number of cranes placed by Anaconda Copper Mining Co., New York, and for subsidiaries, the Chile Exploration Co. and Andes Copper Mining Co. for South American shipment. Morgan Engineering Co. closed on five for Chile company, including 85 ton crane and two converter cranes; Whiting Corp. on two 5-ton and two 10-ton cranes for Anaconda company for domestic plants; and Armington Engineering Corp. on a 5-ton handpower crane for Chile exploration. A number of other cranes have been placed.

Among the single awards were: 5-ton crane for new rolling mill of Latrobe Electric Steel Co., Latrobe, Pa., and 8500-pound derrick hoist for Carrie furnaces, of Carnegie Steel Co., Pittsburgh, both placed with Euclid Crane & Hoist Co., through Factory Products Co., Pittsburgh; 5-ton truck-mounted crane for Shriver Contracting Co., and 5-ton truck-mounted crane for McCrady Bros., Braddock, Pa., placed with Factory Products Co., Pittsburgh; electric crane for Nazareth Cement Co., Nazareth, Pa., awarded Cleveland Crane & Engineering Co. through Ford, Bacon & Davis, New York; 10-ton electric crane for Long Bell Lumber Co., Longview, Wash., to Milwaukee Electric Crane & Mfg. Co.; 15-ton electric crane for Lancaster Iron Works, Lancaster, Pa.; 15-ton trolley for Consolidated Mining & Smelting Co., New York, and 5-ton trolley for Edward G. Budd Mfg. Co., Philadelphia, all three to Niles-Bement-Pond Co.; 40-ton locomotive crane for Acme Steel Co., Germyn, Va., to Philip T. King, New York; 30-ton electric overhead crane for Elizabethport, N. J., shops of Central of New Jersey, reported placed; 40-ton locomotive crane for Dwight P. Robinson & Co. Inc., New York, to Industrial Works for Chicago shipment; 20-ton powerhouse crane for Youngstown Sheet & Tube Co., Youngstown, O., to Cleveland Crane & Engineering Co.; floor crane for service station of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to Canton Floor Crane & Hoist Co., Canton, O., through Somers, Fitler & Todd, Pittsburgh; used 20-ton locomotive crane for Emery A. Long Co., Baltimore, to unnamed seller; used 20-ton crane bought by Standard Seamless Tube Co., Economy, Pa.

CRANE ORDERS PENDING

Crane list expected shortly from Weirton Steel Co., Weirton, W. Va.

Additional orders expected shortly from Carnegie Steel Co., Homestead, Pa., and other points.

Single inquiries: 5-ton and 10-ton cranes for Buffalo warehouse of General Electric Co., Schenectady, N. Y., withdrawn; 3 or 4-ton electrically driven locomotive crane for Mobile Steel Co., Mobile, Ala., bids asked; 25-ton crane for Superior Steel Corp., Carnegie, Pa.; crane for Hazelwood coke plant of Jones & Laughlin Steel Corp., Pittsburgh; 15-ton overhead crane for Santa Fe railroad shops, San Bernardino, Calif; 20-ton locomotive crane for Southern Pacific, taking bids; 7½-ton transfer crane for Hammond Lumber Co., San Francisco; bids opened Nov. 1 on 5-ton overhead crane for South San Joaquin Irrigation district; Manteca, Calif.

A. S. T. M. Committees in Fourth Meeting

(*Concluded from Page* 1178)

that the bridge steel specifications require the open-hearth process, while the building steel specifications permit either the open-hearth or bessemer process, the use of the latter being somewhat limited. In addition, the chemical requirements and the requirement for elongation are somewhat more severe in the bridge steel specifications. This subcommittee also has under discussion for recommendation to committee A-1 the question "What investigation might be made towards obtaining for ordinary use structural steel of higher physical properties, whether by heat treatment or otherwise."

Subcommittee XV of A-1 discussed the matter of including requirements for shafting in the specifications covering chemical and physical properties that would be useful to the trade. However, the advisory committee asked the subcommittee to proceed with its plans for separate specifications for hot rolled and cold finished material and to consider the possibilities of including in the latter a table of shafting tolerances. Following two year's work on specifications for cold rolled strip steel, subcommittee XIX of A-1 adopted a draft of specifications to be submitted to the main committee next January.

Committee A-2 on wrought iron is investigating the effect of annealing on the properties of staybolts. Results seem to indicate that by annealing after threading, the life of the bolts probably would be doubled. Modification of all wrought iron specifications is being considered looking to the revision of requirements for tensile strength and elongation. James Aston, metallurgist, A. M. Byers Co,. Pittsburgh, and G. H. Woodroffe, metallurgical engineer, Reading Iron Co., Reading, Pa., were elected vice chairmen of the committee.

To determine the effect of arsenic and tin on high speed tool steel, the committee recently appointed to study this subject has decided to make test heats of steel of the following specifications: Carban, 0.65-0.70; manganese, 0.25-0.35; phosphorus, maximum 0.02; sulphur, maximum 0.02; silicon, 0.20 to 0.35; chromium, 3.50-4.00; vanadium, 0.80-1.00; tungsten, 17.50-18.50; arsenic a trace; and tin 0.50. In a second test, the arsenic will be made 0.50 and tin a trace, while in a third both arsenic and tin will be a trace.

At the annual meeting last June the society tentatively accepted a proposal of committee A-7 on malleable castings that the yield point of malleable iron be fixed at 30,000 pounds per square inch. At that time there was some question as to the accuracy of determination of the yield point by the drop of the beam method. At the Cleveland meeting it was decided that the divider method of determining yield point should be specified as an alternate method.

Claire Furnace Case To Be Reargued

Washington, Nov. 3.—New arguments in the Claire Furnace Co. case, involving the right of the federal trade commission to demand from producers of steel information concerning output, plant capacity, orders booked, manufacturing costs and prices, will be heard before the United States Supreme Court on Nov. 23, it was announced today. Iron and steel and coal and coke companies joined in a suit in equity against this order of the trade commission, and a permanent injunction was granted by the supreme court of the District of Columbia, which later was upheld by the District of Columbia appellate court. An appeal was made to the United States Supreme Court, and arguments were presented before the latter tribunal nearly two years ago. The court last spring asked for new arguments, assigned for Nov. 23.

Pig Iron Buying Not Checked by Price

(*Concluded from Page* 1168)

the major share of its week's tonnage at $21.50 to $22.50, base, furnace, while another lake furnace has been selling during the week at $23, base, furnace. The General Motors Corp. has not closed on its last inquiry for 21,000 tons for the Buick plant at Flint. Inquiries pending, exclusive of this, total around 50,000 tons. The Westinghouse Electric & Mfg. Co. bought 1500 tons for Cleveland for this quarter, and is inquiring for 3500 tons for Trafford City. A Newark, O., stove foundry is in the market for 3000 tons of foundry iron for first quarter. The United Alloy Steel Corp., Canton, O., has closed with a valley interest for 5000 tons of basic for first quarter. On other inquiries, put out Monday, $20, valley, was the lowest quotation from several sources.

Cincinnati, Nov. 3.—Inability of producers of pig iron in southern Ohio to book additional tonnages for shipment over the balance of this year has diverted considerable business to other districts. Northern iron is firm at $21, Ironton. Tennessee iron has advanced $1 to $20, Birmingham, while Alabama iron holds firm at $21. Recent sales aggregated close to 5000 tons. The Domhoff & Joyce Co., reported the sale of 1200 tons of charcoal to the Pittsburgh district, while another seller sold 700 tons of northern foundry to the Lunkenheimer Co., Cincinnati. The Globe Stove & Range Co., Kokomo, Ind., wants 500 tons of northern, while the American Seeding Machine Co., Springfield, O., is inquiring for 600 tons of the same grade. The Mt. Vernon Car Mfg. Co., is in the market for a limited tonnage of charcoal and northern foundry. The H. P. & F. M. Roots Co., Connersville, Ind., is negotiating. While no further changes are noted in silvery iron prices, the Jackson Iron & Steel Co., is sold up for the balance of this year on all grades except 6, 7 and 8 per cent.

Chicago, Nov. 3.—Northern iron continues strong and some melters, needing a desired analysis, have paid premiums. The market is tending away from $22, Chicago furnace, for No. 2 foundry and malleable and $22 to $22.50 seems applicable. One seller claims no longer to have a price but to be considering inquiry individually. October shipments about Chicago were the heaviest for any month in the history of this district and November is starting out at the same gait. Melters' stocks will not average over two weeks. Inquiries from 1000 to 2000 tons are numerous. While some melters are stocking, the great bulk of current shipments is going into the cupola. Coke is the uncertain factor in the present changing market. Inquiries for 4000 and 3000 tons of malleable for Milwaukee melters have been closed. Low phosphorus, charcoal and silvery iron are not sharing the activity in foundry and malleable iron. Eight of the ten merchant stacks in this district are active.

St. Louis, Nov. 2.—While the major buying movement in pig iron has tapered off, there still is a good volume of current sales, and inquiries are fairly numerous. Actual sales total approximately 8000 tons, mainly for first quarter.

The St. Louis Coke & Iron Co. sold 4000 to 5000 tons for first quarter, including 2500 tons of basic to a local steelmaker and 2500 tons of foundry to an equipment manufacturer. Northern iron is firm at $22 for the base grade, and southern is $21, Birmingham. The leading local producer has advanced its price 50 cents to $23 to $23.50, f.o.b. Granite City.

Birmingham, Ala., Nov. 2.—Every furnace interest in the Birmingham district is active. Pig iron has been sold through the first quarter. The minimum quotation is $21 for No. 2 foundry, and small sales are being made daily at $21.50 and $22. A scarcity in some grades of iron is reported. Production is to be increased. The Republic Iron & Steel Co. will be able this week to resume operating one of its furnaces that has been repaired.

The Sloss-Sheffield Steel & Iron Co. will blow in No. 1 furnace at Gadsden next week. The Tennessee Coal, Iron & Railroad Co. will have its Ensley furnace, now being relined, back in commission this month.

Iron Production in Good Gain

October Output of 104,584 Tons Per Day Is 15.1 Per Cent Better Than September Rate—Active Blast Furnaces Jump from 200 to 209 During the Month

PIG iron in October continued on the upward swing commenced in July and made the largest monthly gain in daily rate in three years, or since October 1922. The total improvement over September was better than a half a million tons. Operations also remain on the increase, nine more furnaces being blown in during October.

Production of coke pig iron in October totaled 3,242,123 gross tons and was a gain of 516,238 tons, or 18.9 per cent, over the 2,725,885 tons made in the preceding month. October was a one-day longer month than September. On an average daily basis, the production of the month represented 104,584 tons, which compared with the 90,862-ton daily rate of September, showed an increase of 13,722 tons, or 15.1 per cent. This was the largest single month's gain since October 1922 when production rose from 67,466 tons per day to 84,827 tons per day, the increase being 17,361 tons or 25.7 per cent. In October, pig iron was made at the rate of 38,200,000 tons per year, as compared with the indicated annual rate of 33,200,000 tons in September.

Merchant pig iron produced in October amounted to 576,370 tons, this being an increase of 7151 tons over the 569,219 tons made in the preceding month. On an average daily basis, however, the output of 18,592 tons showed a loss of 382 tons from the 18,974-ton daily rate of September. Nonmerchant or steelworks iron aggregated 2,665,753 tons, which compared with the 2,156,666 tons of the month before, was a gain of 509,087 tons. Reduced to an average daily basis, the October nonmerchant iron represented 85,992 tons per day, which compared with the 71,888-ton rate of the preceding month was an improvement of 14,104 tons.

Active blast furnaces on Oct. 31 totaled 209, or 9 more than were producing iron on Sept. 30. During the month 4 merchant furnaces were blown in and 1 was blown out, the net gain being 3 furnaces. Of the nonmerchant class, 10 were blown in and 4 blown out or banked, the net increase being 6.

Furnaces blown in during October were: In Ohio: Central A, American Steel & Wire Co. and Ironton, Marting Iron & Steel Co. In Pennsylvania: Cambria K, Bethlehem Steel Co.; one Carrie, one Clairton and one Isabella, Carnegie Steel Co. and Shenango No. 1, Shenango Furnace Co. In New York: Lackawanna G, Bethlehem Steel Co. In Maryland: Maryland C, Bethlehem Steel Co. In Tennessee: Iroquois No. 4, Youngstown Sheet & Tube Co. In Tennessee: Cranberry, Cranberry Furnace Co. In Alabama: Bessemer No. 3, Tennessee Coal, Iron & Railroad Co. In Colorado: one Minnequa, Colorado Fuel & Iron Co. In Illinois: South Chicago No. 1, Wisconsin Steel Co.

Stacks blown out during the month were: In Ohio: Youngstown B, Youngstown Sheet & Tube Co. and River No. 3, McKinney Steel Co. In Pennsylvania: Monongahela No. 4, National Tube Co. In Maryland: Maryland B, Bethlehem Steel Co. In Alabama: Tuscaloosa, Central Iron & Coal Co.

Active Blast Furnaces

	In blast	Total	Per Cent
October	209	386	54.1
September	200	387	51.6
August	192	391	49.2
July	188	396	47.5

MONTHLY PRODUCTION

	1925	1924	1923
January	3,372,207	3,015,480	3,228,226
February	3,214,067	3,073,619	2,993,918
March	3,571,422	3,465,389	3,523,595
April	3,211,235	3,226,107	3,546,308
May	2,933,907	2,619,986	3,868,486
June	2,679,045	2,022,836	3,667,868
Total 1st half	18,981,883	17,423,417	20,828,401
July	2,665,262	1,783,457	3,684,677
August	2,707,171	1,882,986	3,448,886
September	2,725,885	2,053,617	3,117,526
October	3,242,123	2,461,727	3,142,642
November		2,514,979	2,891,191
December		2,956,389	2,912,527
Total 2nd half		13,653,155	19,197,449
Grand total	30,322,324	31,076,572	40,025,850

AVERAGE DAILY PRODUCTION

	1925	1924	1923	1922	1921
Jan.	108,781	97,273	104,136	53,090	77,895
Feb.	114,788	105,987	106,925	58,220	69,906
Mar.	115,207	111,787	113,664	65,674	51,447
Apr.	107,041	107,537	118,210	69,005	39,691
May	94,642	84,515	124,790	74,495	39,202
June	89,301	67,427	122,262	78,748	35,466
July	85,976	57,531	118,860	77,517	27,892
Aug.	87,328	60,741	111,254	58,408	30,802
Sept.	90,862	68,454	103,917	67,466	32,859
Oct.	104,584	79,410	101,375	84,827	39,821
Nov.		83,832	96,373	94,870	47,165
Dec.		95,367	93,952	99,468	52,992
Ave.	99,744	84,908	108,659	73,563	45,223

DIVISIONS OF PRODUCTION

1924	Merchant	Non-merchant	Spiegel	Ferro-manganese	Other ferro
Jan.	707,710	2,307,770	7,948	19,735	.....
Feb.	679,700	2,393,919	9,870	22,262	.....
Mar.	712,321	2,753,068	13,794	22,350	.....
Apr.	708,151	2,517,956	4,240	23,580	163
May	648,656	1,971,330	9,336	21,663	763
June	551,408	1,471,428	9,410	20,563	779
July	468,780	1,314,677	15,328	11,927	765
Aug.	465,059	1,417,927	8,010	7,654	760
Sept.	518,017	1,535,600	5,033	7,255	593
Oct.	607,717	1,854,010	10,047	7,780	822
Nov.	605,438	1,909,541	8,835	13,429	870
Dec.	634,726	2,321,663	5 284	21,220	904
Total	7,307,683	23,768,889	107,135	199,418	6,419
1925					
Jan.	659,256	2,712,951	5,418	23,564	956
Feb.	661,415	2,552,652	4,910	19,796	848
March	736,284	2,835,138	5,449	24,422	877
April	689,162	2,522,073	5,341	21,448	799
May	605,347	2,328,560	5,294	22,717	298
June	563,782	2,115,263	4,972	19,834	.....
July	609,741	2,055,521	5,074	16,614	.....
Aug.	588,330	2,118,841	4,940	18,818	.....
Sept.	569,219	2,156,666	5,162	18,381	140
Oct.	576,370	2,665,753	5,071	21,472	1544

OCTOBER PIG IRON

	No. of stacks	No. in blast last day of month Oct.	Sept.	Total tonnage made Merchant	Nonmerchant	—Totals— Oct.	Sept.
Pennsylvania	136	73	69	107,401	917,740	1,025 141	882,809
Ohio	72	45	45	123,531	618,763	742,294	691,280
Alabama	38	22	22	100,673	114,873	215,546	215,562
Virginia	17	2	2	11.238	.....	11 238	9,832
New York	26	13	12	67,785	108,444	176,229	148,796
New Jersey	4	0	0	.....	.....	.....	.....
Illinois	25	16	14	92,582	177,297	269,879	247,425
Colorado	4	2	1				
Indiana	17	14	14	32,941	351,602	384,543	353,742
Maryland	6	5	5				
Wisconsin	5	2	2				
Kentucky	7	1	1				
Tennessee	14	3	2	14,334	71,693	86,027	82,026
Utah	1	1	1				
West Virginia	5	4	4				
Michigan	4	4	4				
Minnesota	3	2	2	14,700	288,439	303,139	70,730
Missouri	1	0	0				
Texas	1	0	0				
Spiegel and ferro—all states	....	....	....	11,185	16,902	28,087	23,683
Total	386	209	200	576,370	2,665,753	3,242,123	2,725,885

Are farmers prospering? This trainload of tractors, worth a quarter of a million dollars, is enroute to the agriculturists of the Middle West

Equipment Makers See Real Farm Prosperity

By E. C. Barringer

REAL farm prosperity is more nearly a fact today than for several years and continued good business looms ahead of the equipment industry, declared Finley P. Mount, president of the National Association of Farm Equipment Manufacturers, at the thirty-second annual convention at Chicago, Oct. 28-30. He warned, however, that costs must be watched if the American farmer is to be equipped for the day when the United States goes on a strictly domestic basis for farm products and there comes a concomitant demand for cheaper food.

Standardization of equipment was urged as one means of reducing costs. It was declared that the industry requires greater selling efforts to bring labor-saving equipment into greater use. The recent developments in Europe, such as the signing of the Locarno pact, should prove stimulating to export business, it was said. Confidence was so decidedly the tone of the convention that cautions against over-confidence were numerous.

In summarizing conditions in the implement industry Mr. Mount said in part:

"The future of our business looks promising indeed. It will take several years to replace the wornout equipment now on the farms. We have lately talked a good deal about this shortage of equipment. We have felt each year the break would surely come. Sometimes we have become discouraged to the point of believing this demand did not really exist and would never materialize, but the year just closing has demonstrated that this demand is there and only awaits a little more farm prosperity to continue its satisfaction.

"Real farm prosperity is more nearly a fact to-day than for many years. We may not expect the flood of this demand to break loose next year nor in any one year. It will be better for us all if we can avoid a boom in farm machinery. We may even expect some periods of recession, but every such recession will only tend further to accumulate the need, and if the need be there the demand must come. What agriculture needs agriculture must have, and what agriculture must have we as farm equipment manufacturers will be better prepared to furnish than ever before.

"We must bend every effort toward improving the efficiency of our own product and of our own shops. We must continue to reduce our own costs, if we would continue to hold our preferred position both at home and abroad. The United States is a free and unrestricted market and is subject to invasion at all times by any foreign manufacturer, who can produce more cheaply than we produce. One of the simplest ways to cut our costs down is further to standardize in sizes and types of machines. We do not need to build farm machinery to individual taste and specification. To do so means to surrender one of our biggest factors in cost reduction, namely mass production. Let quality, efficiency and low cost take further precedence over variety.

"In this way we shall not only help ourselves as manufacturers but we shall contribute still further to the ability of the American farmers so to reduce his costs that he too can meet foreign competition both at home and abroad. We can never too strongly emphasize the fact that it is not the price alone of farm products which makes or unmakes American farm prosperity, but always it is the spread between the cost of production and the market price. So long as we are on an exporting basis agriculturally, we must check our farm costs against the farm costs in foreign countries, and in doing this we start handicapped by a higher plane of living and a higher labor cost than that of any other country. This handicap we as machinery manufacturers can help to overcome by providing such improvements in farm equipment as will enable the American farmer to produce more cheaply than his foreign competitor.

"That we will not forever nor even for long remain on an exporting basis agriculturally, is quite generally admitted. When the time comes that

we are on a purely domestic basis for agricultural products, I predict the demand for cheaper food will inevitably come and with it a demand for the removal of all tariffs on agricultural production. The time to meet such a situation is before it arrives; as the American farmer must be prepared by low cost production to stand on and meet foreign competition in a free market, even as our industry has been obliged to do these many years."

Stable prices are an important factor in the present improved condition of the industry, said E. J. Gittins, chairman of the association's executive committee. Stability of price levels is the more important to the industry because of its comparatively slow rate of turnover, he maintained. Mr. Gittins said further:

"There is nothing in our present general situation to justify a hope that costs will be lower in the near future. On the contrary, there is a strong tendency toward higher levels. The outstanding factor in the consideration of all costs is that of labor. There is nothing in the present labor situation to indicate lower rates. The contrary is the situation. The National Industrial Conference board, in its service letter of Oct. 12, points out that their monthly surveys show there is a constantly upward trend in labor rates. In some industries substantial gains in July and August were registered, and a slight gain since then.

"We have operated during the past year under more normal conditions than at any time since before the war. For the first time in more than four years the price of farm products has reached a level that is substantially on a parity with industrial commodities. There have been no bumper crops, but they are quite well balanced and adjusted to demand. The season has been early, with dry weather finally pushing the crops along to early maturity.

"A recent limited survey made by the research department shows that in some lines of farm machinery the increase of domestic sales this year, as compared with 1924, is quite large, while in other lines of equipment the increase is nominal. The average increase of all equipment sales may reach 25 per cent. The increase is not because of corresponding increased agricultural income. The increased income this year will probably not greatly exceed that of last year. Business with agriculture, however, has benefited because of the banked up need, the balancing and stabilizing of prices and therefore the restoration of confidence. The need for more and better equipment has been pyramiding since 1920 and as other factors in the stiuation are favorable we are justified in anticipating a further increase in 1926.

"The improved conditions in foreign countries are being reflected in increased demand for our equipment. Even Europe seems to be finally moving toward better stability and we are beginning to feel the pull for more of our efficient farm equipment."

To insure increasing agricultural prosperity through the present generation there must be a further reduction in farm operating costs, declared A. E. McKinstry, International Harvester Co., Chicago. The implement industry, he said, is meeting its responsibility as the pilot of agriculture through its engineering laboratories and workshops but must find a way to obtain rapid and general adoption of the labor-saving profit-making equipment it has made available.

Dr. Julius Klein, director, bureau of foreign and domestic commerce, Washington, predicted that mass production would enable American iron and steel producers to withstand competition in foreign markets. He said:

"The American steel industry is able to hold its own in the world's open markets in the face of any reviving European competition because of the elements of tremendous mass production due to the employment of far greater efficiency in management and in labor. Our present steel ingot production is just under 60,000,000 gross tons, or considerably more than all of the rest of the world put together. American pig iron capacity is rated at 53,000,000 tons, which is likewise more than half of the world's total. Our European rivals in this field may have obtained at one time or another momentary price advantages, but after their currencies become stable and their production costs increase, which is everywhere evident, it is difficult to see how they can stand up in the long run in those lines in which American industry proposes to make a serious export effort."

E. I. Gittins, of the J. I. Case Threshing Machine Co., Racine, Wis., who has been chairman of the executive committee the past year, was elected president.

Bans Long Terms

I WOULD urge that we put the brakes on long terms. These have become the bane of our industry. They have already caused a high rate of mortality in our ranks and threaten still further disaster unless curbed and brought within the limits of reasonable merchandising. No matter how good our credits may be, no matter how strong our bank account, no matter how much we think we need the volume, we cannot as manufacturers afford to keep piling up customers' notes, for it breaks the principles of sound business and will eventually break us. We are not bankers nor brokers. Let us leave the banking end of our business in hands especially trained for that work and as manufacturers and distributors stick like the shoemaker to our own last."—FINLEY P. MOUNT, *retiring president of the National Association of Farm Equipment Manufacturers.*

Wire Merger Ratified

Stockholders of the Kokomo Steel & Wire Co., Kokomo, Ind., have ratified a merger with the Keystone Steel & Wire Co. of Peoria, Ill., the new corporation to have $15,000,000 capital and to be known as the Continental Steel & Wire Co. Both plants will be operated as at present and annual capacity is about 250,000 tons.

A petition in bankruptcy filed against the Terrace Lighting Fixture Mfg. Co. Inc., 182 Grand street, New York, showing liabilities of about $20,000 and assets about $2000, resulted in the appointment of Catherine Noyes as receiver.

Instead of "Twenty-mule team" outfits, the farmer to-day draws 20 or more wagonloads with one tractor

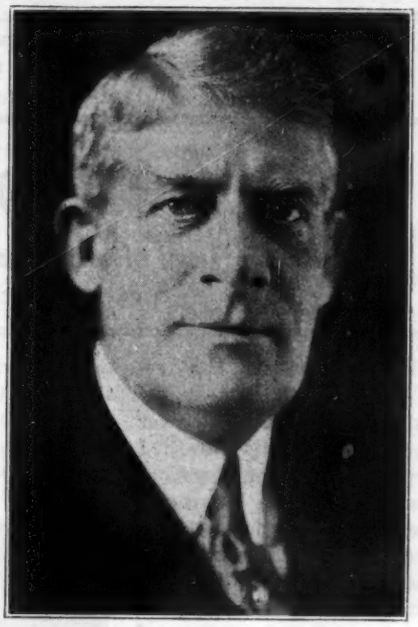
Industrial Men in the Day's News

William G. Clyde, New President of the Carnegie Steel Co.

FROM ingot tracer to chief executive of the largest industrial company in the steel industry is his record in less than 35 years.

HIS advancement brings a new type of leadership to the exceptional traditions of the Carnegie Steel Co.

ALTHOUGH experienced in steel production his career has been devoted largely to sales and distribution.



ADVANCING from the job of ingot tracer in the mill of the Wellman Steel & Iron Co., Thurlow, Pa., which was his first real connection with the steel business, to the presidency of the Carnegie Steel Co. in a period less than 35 years, is the business accomplishment of William C. Clyde. Mr. Clyde was elected to the presidency Oct. 31 at a special meeting of the board of directors of the United States Steel Corp., held in New York. He succeeds Homer D. Williams who had resigned the day previously, to become president of the Pittsburgh Steel Co.

Prior to his connection with the Wellman Steel & Iron Co., Mr. Clyde had been brought into contact indirectly with the iron and steel business. After graduating with the class of 1888 from the Pennsylvania Military college at Chester, Pa., where he had obtained his earlier education in the public schools, he first was employed by Ryan & McDonald, Baltimore, contractors, and operated a steam shovel. He rose to be one of their civil engineers and several months later, became associated with Robert Wetherill & Co., Chester, Pa., machinists and founders.

In his appointment as president of the Carnegie Steel Co., it has been said the Steel corporation has set aside what has come to be recognized as established precedent which was to fill this office with an operating man. In the case of his predecessors including Mr. Williams, Alva C. Dinkey, William E. Corey, Charles M. Schwab and Henry C. Frick all were operating men. While in later years Mr. Clyde has devoted his energies to the sales end of the steel business, he is, however, a practical steel man having an unusual equipment of mill experience. As indicated, he started his mill training with the Wellman Steel & Iron Co. as an ingot tracer, a job, looked upon by steel men generally as the initial step in learning the steel business. He became a roller on the 132-inch mill and finally was made superintendent of plate mills. Offers of other positions with other steel companies were made to Mr. Clyde and after two and one-half years with the Wellman company, he accepted the superintendency of plate mills of the Illinois Steel Co., South Chicago, where he remained for six years.

With his eyes on the commercial side of the steel industry, he became a traveling salesman in the Chicago district for the American Steel Hoop Co. When that interest decided to establish a branch office in Philadelphia, Mr. Clyde was the logical man for district manager of sales. He held that position when the American Steel Hoop Co. was absorbed by the Carnegie Steel Co. in 1902 or 1903. After the absorption he was left at Philadelphia as traveling salesman out of the Philadelphia office of the Carnegie Steel Co. Later he served in the same capacity at Cleveland. Undaunted by what would appear to be a demotion, Mr. Clyde made the most of every opportunity at both Philadelphia and Cleveland. At the end of three years he was sent for by the Carnegie Steel Co. to come to Pittsburgh as assistant general manager of sales. This was about 1905 and he discharged the duties of that office faithfully and well for about 13 years. At one time it was said that during that entire period Mr. Clyde was never absent

from duty more than 24 hours at a time. He always has retained the confidence and esteem of subordinates as well as of his superior officers.

One of the latter said not long ago: "Bill Clyde is one of the best steel salesmen in the world. He is a leader and one who is not afraid of hard work. The sales department of the Carnegie Steel Co. under his regime has worked smoothly and harmoniously. He is a keen, alert businessman and accomplishes much without friction."

From April 1, 1918 to Oct. 30, 1925 Mr. Clyde has filled the office of vice president and member of the board, as well as general manager of sales.

Mr. Clyde takes prides in the fact that in June 1924 he received the honorary degree of doctor of applied science from his alma mater, the Pennsylvania Military college, from which he was graduated with the class of 1888. That college has been called "The West Point of the Keystone State." It celebrated its centennial in June, 1921, after coming into being nine years after the war of 1812.

Mr. Clyde is a thirty-second degree Mason. He is a director of the Bank of Pittsburgh, and a member of the Bankers' club, New York, the Seaview Golf club, Absecon, N. J., the Engineers' Society of Western Pennsylvania, the Pilgrims of New York, the Pittsburgh Athletic association, Duquesne, University and Country clubs. He is a director of the Steel corporation and Carnegie Pension Fund. He drives a golf ball like he does business, hard and straight and with equal enthusiasm.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

LLOYD H. ATKINSON has resigned as vice president of Rogers, Brown & Crocker Bros. Inc., and after Nov. 1 will be vice president of the Bayshore Co., Jacksonville, Fla. The latter corporation is engaged in industrial and port developments at that point. Mr. Atkinson has been connected with the iron and steel business since 1908 when he became rail sales agent of the Bethlehem Steel Co., later becoming a partner in Crocker Bros. which afterwards merged with Rogers, Brown & Co.

* * *

William T. B. Miller, formerly with Morris-Wheeler & Co., Philadelphia, iron and steel distributor, for seven years, has joined the sales force of Horace T. Potts & Co., that city.

* * *

P. E. Seibel has joined the sales department of the Triplex Machine Tool Co., 50 Church street, New York, dealer in machinery and tools and manufacturers' representative.

* * *

E. A. Waters, recently elected president of the Central States Metal Sales Co., Chicago, formerly was connected with the Wheeling Steel Corp., Wheeling, W. Va., and the Republic Iron & Steel Co., Youngstown, O.

* * *

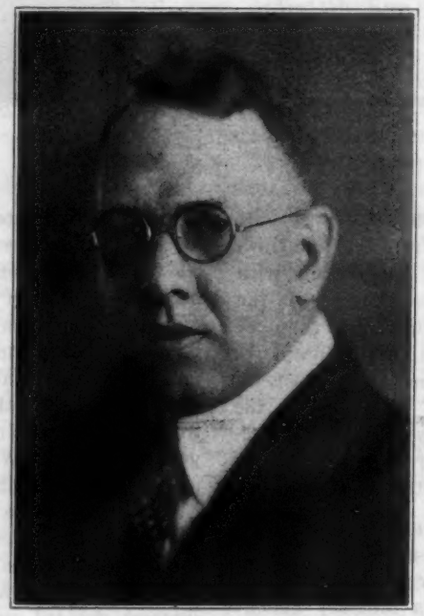
F. M. Cross, formerly manager of the New York pneumatic tool department of the Ingersoll-Rand Co., New York, has been appointed manager of the pneumatic tool department for the Chicago territory.

* * *

Frank P. Cox, manager of the West Lynn works of the General Electric Co., has been elected a director of the American Management association and vice president in charge of the production executives' division.

* * *

Glenn D. East has resigned as district sales manager of the Cleveland office of the Newton Steel Co., Youngstown, O., effective Dec. 1, to become manager of sales for the Empire Steel Co., Cleveland, formerly the Empire Rolling Mill Co.



GLENN D. EAST

* * *

Edward B. Wickes has been elected vice president of the Wickes Boiler Co., Saginaw, Mich., according to formal announcement by the company.

Henry E. Aldrich has been appointed general sales manager for the Wickes company.

* * *

J. Moir Price has been elected president of the Electro Metallurgical Sales Corp., 30 East Forty-second street, New York, of which company he had been vice president. W. J. Priestly, formerly Pittsburgh representative, and recently made assistant general sales manager, with office in New York, has been elected vice president.

* * *

R. P. Hudson, formerly connected with the coke inspection department of the American Rolling Mill Co. at Nellis, W. Va., has been placed in charge of the blast furnace laboratory for that company at Ashland, Ky., effective Nov. 10. He retains an interest in the coke inspection department and will carry on some special analytical work in this connection.

* * *

George S. Sangdahl has joined the Chicago Bridge & Iron Works, Chicago, as district sales manager at Cleveland. He had held a similar position in Montreal with the Horton Steel Works, Ltd., subsidiary of the Chicago company.

A. W. Warren, at present in the Chicago office of the Chicago Bridge works, will be assistant to Mr. Sangdahl at Cleveland.

* * *

Ralph R. Browning has been elected president of the Oxweld-Acetylene Co. and the Union Carbide Sales Co., New York, of which companies he previously had been vice president. He has been elected vice president of the Linde Air Products Co. in charge of all sales activities. He has been

(*Continued on Page* 1190)

New Carnegie Steel Co. Head

William G. Clyde Succeeds Homer D. Williams as President of the Largest Subsidiary of the United States Steel Corp.—Mr. Williams Becomes Head of Pittsburgh Steel Co. Through Reorganization

PITTSBURGH, Nov. 2.—William G. Clyde has been elected president of the Carnegie Steel Co., the largest unit of the United States Steel Corp., to succeed Homer D. Williams, effective Oct. 31. Mr. Williams tendered his resignation as president of the Carnegie company Oct. 30. He had been president since Oct. 6, 1915. No successor to Mr. Clyde as senior vice president and general manager of sales for the Carnegie company has as yet been named.

Mr. Clyde succeeds in office as president of the Carnegie Steel Co. such strong men as Andrew Carnegie, Henry C. Frick, Charles M. Schwab, William E. Corey, Alva C. Dinkey and Mr. Williams.

Mr. Williams was offered and accepted the presidency of the Pittsburgh Steel Co. as a result of its reorganization just effected. Emil Winter and Edward H. Bindley were reelected vice presidents, H. J. Miller, secretary, and Ray Maxwell, assistant secretary. W. C. Reitz was elected treasurer to succeed Clyde Snyder, and W. L. Rowe as assistant treasurer to succeed C. E. Reichbach.

Following his education at Lehigh university, Bethlehem, Pa., Mr. Williams entered the works of the Illinois Steel Co. at Joliet, Ill., and then went with the Colby mine, Bessemer, Mich. Subsequently he was with the Colorado Fuel & Iron Co., Denver, and the Maryland Steel Co., Sparrows Point, Md. He left there to take charge of the bessemer department of the Homestead works for the Carnegie Steel Co. In 1901 he was appointed assistant general superintendent of the Homestead works and in 1903 was made general superintendent of the Duquesne works of the Carnegie company.

The Pittsburgh Steel Co. was founded by Wallace H. Rowe, its first president who died Feb. 1, 1919. He was succeeded by John Bindley, former vice president. Mr. Bindley became chairman when Willis F. McCook was elected president on Nov. 1, 1922. Mr. Bindley died in 1922 and Mr. McCook on Aug. 5, 1923. Mr. Bennett then was selected from among the vice presidents as president, to serve temporarily. He resigned upon the acceptance of the presidency by Mr. Williams. The Pittsburgh company has a capacity of 360,000 tons of basic pig iron annually, and an ingot capacity of 550,000 tons. Its finishing mills have an annual capacity of 550,000 tons of blooms, billets and bars, 300,000 tons of wire rods, 335,000 tons of plain wire, 120,000 tons of galvanized wire, 2,500,000 100-pound kegs of wire nails, 90,000 tons of barbed wire and 80,000 tons of wire fencing. These works are at Monessen, Pa. At its plant in Glassport, Pa., it produces hoops, bands, and cotton ties, having 36,000 tons annual capacity. The company owns and operates the Rowe mine, and has substantial interest in the Bennett Mining Co. and Mesaba Cliffs Iron Mining Co. It owns and operates 400 coke ovens at Alicia, Pa., with 350,000 net tons of coke annual capacity.

Heading the Carnegie Steel Co. places Mr. Clyde in charge of the largest single subsidiary of the United States Steel Corp. The company operates 59 blast furnaces with 8,765,240 tons annual capacity of iron and ferroalloys. Its 23 steel works and rolling mills have an annual cacapacity of about 10,000,000 tons of steel ingots; about 8,000,000 tons of semifinished products; about 6,000,000 tons of finished hot rolled products, including rails heavy and light structural shapes, universal and sheared plates, merchant bars, concrete bars and special shapes, splice bars, shapes, steel wheels and hoops, bands and cotton ties, skelp, miscellaneous rolled products; 165,000 tons of forged axles, 22,500 tons of armor plate, 13,720 tons of miscellaneous forgings, 1700 tons of bolts and rivets and 36,000 tons of slack barrel hoops.

A descriptive biography of the career of Mr. Clyde appears on page 1185 of this issue of IRON TRADE REVIEW.

Commenting on the change of presidents of the Carnegie company Chairman E. H. Gary of the United States Steel Corp., from his office in New York on Oct. 30, issued this announcement: "We have just received from Homer D. Williams a tender of his resignation as president of the Carnegie Steel Co. and its subsidiaries and have promptly telegraphed a recommendation to accept the same to take effect Oct. 31. Also, we have recommended the election, as successor to Mr. Williams, of William G. Clyde, now senior vice president and general manager of sales, to take effect at the same time."

Founders Program To Stress Co-operation

Featuring the twenty-ninth annual convention of the National Founders association, to be held Nov. 18-19 at the Hotel Astor, New York, will be a conference between industrial, agricultural and transportation executives. This session, a part of the new movement for "Better Understanding between Industry and Agriculture," with which the National Founders association, National Metal Trades association, National grange and the American Farm Bureau federation are affiliated, will be held Wednesday, Nov. 18. Practical methods of promoting economy in state and local administrative expenditures and reduction of taxes is held as the specific purpose of the conference.

Report of the industrial committee will be delivered Thursday. The program for the meeting is as follows:

Wednesday, Nov. 18

MORNING

10:30 a. m.—Roll call and reading of minutes. President's message, "Why This Conference," by William H. Barr, president. "Who Pays the Taxes," by James A. Emery, association counsel. "Taxes, the Great American Crop," by William J. Thompson, member of National grange, South China, Me.

AFTERNOON

2:00 p. m.—"Taxation as a Family Burden," by Allan Robinson, president, Commonwealth Bond Corp., New York. "How Taxes Affect Railroad Costs," by R. H. Aishton, president, American Railway association, Washington. "Tax Control through State and Local Group Action," by C. A. Dyer, legislative agent, Ohio State Farm Bureau federation and Ohio State grange.

7:00 p. m.—Annual convention dinner.

Thursday, Nov. 19

10:00 a. m.—Reports of officers. Reports of committee on industrial education, L. W. Olson, Ohio Brass Co., Mansfield, O., chairman. "The Need for Improved Foundry Methods to Overcome Foundry Labor Shortage," by H. M. Lane, president, H. M. Lane Co., Detroit. "Industry and the Public Schools," by L. A. Hartley, director of education, National Founders association. Reports of resolutions and finance committees. Election of officers.

12:00—Adjournment.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

MILES MACHINERY CO., Saginaw, Mich., is moving into larger quarters recently purchased and remodeled, with 25,000 square feet of space. The new plant will house the storage warehouse, rebuilding shops and offices. The machine shops have been arranged for rebuilding used machinery and new equipment has been installed for machining and testing tools. Further construction is planned as additional warehouse space will be required. The company's new address is 900 South Niagara street.

* * *

STEEL PRODUCTS CO., Clarkwood road, Cleveland, has started work on an order for 2,000,000 automobile valves to be delivered during a year. Deliveries have been started.

* * *

MATERIALS exchange has been organized at Tampico, Mexico, to salvage oil well machinery and equipment in fields adjacent to that city, with $200,000 capital. W. E. Bonner is president.

* * *

NEW PROCESS IRON & STEEL CO. Noblesville, Ind., has elected C. F. McCampbell of Indianapolis as general manager succeeding James Hundley. J. F. Reinier has been reelected president, and J. E. Owen and E. E. Worth vice presidents.

* * *

BRIGGS & TURIVAS, 110 South Dearborn street, Chicago, dealers in iron and steel scrap and re-used materials, have bought 18 acres adjoining their present holdings at Western avenue and the Indiana Harbor Belt Line, to provide for expansion in its scrap and storage yards.

* * *

A NEW line of alloy wrenches has been added by J. H. Williams & Co., Buffalo, N. Y., makers of drop forged wrenches. With alloy steel the design has been refined and the weight reduced without decreasing strength. They are made in four styles for various uses.

* * *

CONTROL of the Thomas J. Corcoran Lamp Co., Cincinnati, O., has been sold by Thomas J. Corcoran, president, to C. P. Doll, secretary and treasurer, who will become president on the retirement of the former. The company manufactures automobile lamps. It is capitalized at $2,000,000. Three years ago it absorbed the Corcoran-Victor Co., Cincinnati.

* * *

BAKER MOTORS INC., Union Trust building, Cleveland, has elected directors as follows: G. A. Frantz president and treasurer, W. E. Baker vice president and chief engineer, B. C. Tunison secretary, Bernard Himrod, Frank Hagorski and E. A. Peterson. Manufacturing for the company is done by the Brown Hoisting Machinery Co.

* * *

WESTERN PIPE & STEEL CO., San Francisco and Los Angeles, is inaugurating extensions and improvements in its five plants, for which a bond issue of $1,000,000 is being sold. The principal plant is at South San Francisco. The company produces steel pipe, oil tanks, penstocks gas holders, tank cars and culverts.

* * *

SEVENTY-FIVE years of gas service in Chicago is recounted in a booklet prepared by the Peoples Gas Light & Coke Co., the successor of all the earlier companies which pioneered the industry here. In the story of the development of the gas industry, first for lighting and later for power and heat, is much of the story of the advance of industry and better living during these decades.

* * *

THE C. A. Libbey Co., Oshkosh, Wis., manufacturing dairy barn equipment, has been consolidated with the Hudson Mfg. Co., Minneapolis, making dairy and farm equipment, sprayers, garden tools, hay tools, galvanized tanks and sheet metal appliances. The Hudson company's branch factory at DePere, Wis., was burned recently. Other plants are in Minneapolis and at Hastings, Minn. C. A. Libbey, founder and principal owner of the Oshkosh company, is retained by the Hudson interests as general manager of the division.

* * *

REPLACEMENT of the present plant of the Crucible Steel Casting Co., at 612 Clinton street, Milwaukee, on a new site to avoid interruption of output has been undertaken by the letting of contracts for a new foundry, 134 x 382 feet, at Eleventh avenue and the Chicago & Northwestern main line tracks. The plant is designed by the H. K. Ferguson Co., 4900 Euclid avenue, Cleveland, and will be constructed by W. W. Oeflein, Inc., 86 Michigan street, Milwaukee. The location is adjacent to the plant of the South Side Malleable Co., Fourteenth and Windlake avenues, which is now building an addition 177 x 186 feet, to be ready about Nov. 15 or Dec. 1. Walter W. Lange is president of the South Side company and his brother, Albert C. Lange, heads the Crucible company.

* * *

SAUDA FALLS CO., LTD., a subsidiary of the Union Carbide & Carbon Corp., which supplies electric current for production of ferromanganese and other ferroalloys at the plant of the Electric Furnace Products Co., Ltd., in Norway, is preparing to practically double its generating capacity. It now produces 47,000 horsepower, of which 42,000 is taken by the Electric Furnace Products Co., Ltd., also a subsidiary of the Union Carbide & Carbon Corp. The Electric Furnace Products Co., Ltd., has contracted to take an additional 42,000 horsepower as soon as it is developed. A $4,000,000 first mortgage, 5 per cent sinking fund gold bond issue has been floated to cover the cost of the additional development.

* * *

TWO large plant additions to be commenced immediately is announced by President Lloyd G. McCrum of the Richmond Radiator Co., Pittsburgh. The company at present has 1150 men on its payroll and disburses over $1,250,000 annually in wages. With the additions completed, almost 1400 men will be used with an annual payroll of close to $1,500,000. Construction has started on a 40 x 136 foot addition to the enameled ware plant, and a warehouse of 22,000 square feet for the radiator plant will be begun next week. Additional moulding circles will be installed during the next six months so that the capacity of the radiator plant will be increased 25 per cent and the enameled ware plant 33-1/3 per cent. The company this month has shipped radiation to every continent, Japan buying the largest foreign consignments.

British Steel Market Feeling Better

(*Concluded from Page* 1179)

in steadying prices is the cheapness of coke now obtainable delivered in Cleveland at 18s ($4.35) while the basis in the Midlands has fallen to 11s 6d ($2.78), a reduction of 1s ($0.24). This has a useful counteracting influence in preventing any hasty raising of prices. Except for the American buying, lower prices by this time must have ensued.

The steel trade shows a little more activity, but demands cover a wide range. Shipbuilding orders are badly wanted, and the only rail buying appears to have benefited the Barrow area where rail mills after a period of idleness have three or four months work ahead. Railway buying is restricted to some bridge contracts and a certain amount of railway rolling stock renewal. In this line car building works are busy. There is talk of substantial electrification programs in India which will bring steel orders, and some Indian railways are now in the market for 9000 cars, though as this contract is open for world competition it is possible the business may not find its way into this country. Among recent orders is one for structural steelwork placed with Francis Morton Ltd., of Garston, who has booked some fairly large steel bridge spans for South American, Bengal and Rhodesian railways.

Welsh steelworks will benefit considerably by revival of the tin plate trade, and the fairly large demands for sheet bars for the galvanizing industry, and their competition for general steelwork will be proportionately less keen. Foreign competition is not quite the formidable feature it has been. The fall in franc values is probably responsible for some low quotations still being received, Belgian joists, for example, being offered at £5 1s ($24.44) for tested and £5 ($24.20) for untested joists f.o.b. Antwerp. Steel bars are quoted at £5 6s ($25.65) at the port, and universal plates at £6 5s ($30.25). Germany also is quoting very low prices, including steel bars at £5 7s 6d ($26.01) wire rods £5 16s ($28.07) and steel hoops £6 12s 6d ($32.06), all at the port.

Now that British steel prices are much lower than they were, foreigners have not the same command of the market as a few months ago and it is possible that if heavy orders are given out steelworks can make profits even at present low prices. Steel scrap has been unable to maintain the recent slight advance, although quotations are still made on the basis of £3 7s 6d ($16.33) delivered in South Wales. Buyers are taking only small lots, and are able to get supplies at 2s 6d ($0.60) below this price.

Makers of wrought iron have a small price competition in their own department. Lancashire is keen on recovering the trade in nut and bolt iron, which has for some time gone so largely to Belgium, and has dropped its price for common bars to £10 10s ($50.82) while Staffordshire adheres to £11 ($53.24). No. 3 Belgian iron can be bought at £6 12s 6d $32.06) but this does not compare with the quality of English material. Nut and bolt makers increasingly use mild steel, but the competition of British makers is slightly more effective in wrought iron.

Galvanized sheet makers have raised their quotations to £16 10s ($79.86) an advance of 6s ($1.21) per ton and most new business is said to be on this basis. Makers have good order books, an increasing number now specifying for January and February delivery. But the rise in spelter is an important element. For black sheets, especially the thinner gages, the motor trades are likely to be good customers for the next few months.

A continued improvement in tin plate has relegated the proposed output restriction to the background, and no further progress is likely to be made with it, while more mills come into operation. The improvement in September was sufficient to bring into operation an additional 17 mills, making the total 397, although still 15 below the corresponding period of last year. Prices have improved, now ranging from 19s 9d ($4.78) to £1 ($4.84) per ton, and some orders are being taken well through first quarter and into second quarter next year. South America and Australia have been in the market for good quantities, with improving tonnages to the various continental countries.

The improving demand for high class Sheffield products has stimulated the business in high carbon steels which are being sold in good quantities. Sheffield generally is busier, but the heavy steelworks could handle much larger tonnages.

Think German Steel Past Lowest Point

BERLIN, Oct. 23.—(*European Staff Service*)—President Klockner of the Klockner combine and Otto Wolff recently stated that it was their opinion that German iron and steel business had reached its lowest point and they are expecting an improvement soon. The German output has practically been adapted to consumption, and the greater number of those plants which were operating on an unprofitable basis has been shut down. The combination of various concerns has brought about a reduction of production costs, and a further decrease of 5 to 10 marks ($1.20 to $2.40) per ton in production costs is expected to follow the orgnizaion of the new steel combine of large Rheno-Westphalian steel producers. Difficulties which had arisen in the course of negotiations with the Thyssen combine are being surmounted and Thyssen's quota has been raised to more than 25 per cent. It is expected the contract between the participants of the new combine will be definitely signed shortly. These factors tend to point toward an improvement of German business generally.

Export trade has slightly improved. An agreement recently signed between Belgian and German wire manufacturers has resulted in an increase of business for plain, galvanized and barbed wire. About 20,000 tons of merchant bars have been sold to the Far East and a good volume of inquiries has been received from South America and the Border States. Sales of structural shapes have slightly increased owing to a better demand from Egypt, South America and India. Fair tonnages of bands have been sold at between £6 15s and £7 5s ($32.70 and $35.12) to South America, India and the Balkan States. Transactions in plates are slack owing to the depressed condition of the shipbuilding industry, but some parcels have been sold to China, Japan and Brazil. A certain amount of interest for medium and thin sheets has been shown by India and Brazil. Business in wire rods is slack. The pig iron union has decided to grant export bounties for finished goods manufactured from foundry iron, the present concession being six marks ($1.44) per metric ton. The increasing activity in export trade has reduced the volume of domestic business. The general shortage of capital is also interfering with normal transactions, but producers are slightly more optimistic than during past months.

The monthly average of the output of German rolling mills in 1913 was 930.100 metric tons compared with 681,200 tons in 1924. The maximum output was reached in March, 1925, with 1,003,100 metric tons, since which it has decreased continuously, the August figure being 802,700 tons against 863,000 tons in July. Production of pig iron also is decreasing. The August output was 765,901 metric tons, while in September it was only 734,935 tons. In September, 1924, the output totalled 696,744 tons. Only 96 blast furnace stacks are operating in Germany out of a total of 211. Stocks of pig iron at the furnaces are considerable and business is slack. Due to depreciation of the French franc, producers are enabled to import pig iron into Germany despite the high import duty of 10 marks ($2.40) per metric ton.

Details have been published showing the output of German rolling mills during the first six months of 1925 and for the whole year of 1924. The figures shown in the following table, in metric tons:

	January to July, 1925	Year 1924
Merchant bars	1,554,798	2,321,235
Railroad material	735,869	1,052,858
Semifinished products	554,119	829,769
Wire rods	570,764	908,669
Plates	503,359	766,940
Beams	403,852	460,500
Tubes	341,615	476,406
Bands	228,791	281,891
Sheets	488,440	608,710
Forged iron products	95,426	128,482
Railroad rolling stock	73,950	206,667
Tinplates	48,934	86,488
Other finished products	33,870	45,705
TOTAL	5,633,797	8,174,320

Men of Industry

(*Continued from Page* 1186)

elected vice president also of the Prest-O-Lite Co., Inc. Mr. Browning's headquarters are at 30 East Forty-second street, New York.

* * *

Charles R. Hook vice president and general manager of the American Rolling Mill Co., Middletown, O., has become vice president of the American Management association. Mr. Hook had been vice president in charge of the production executives' division of that association.

* * *

C. V. Wilt has been placed in charge of operations of the Mackintosh-Hemphill Co., Pittsburgh, to succeed John H. Bode, vice president who retired Nov. 1 to become president of Wellman-Seaver-Morgan Co., Cleveland. Mr. Wilt assumes his new obligations in the capacity of assistant to the president, J. Ramsey Spear.

A. H. Braum has been made second assistant to the president.

* * *

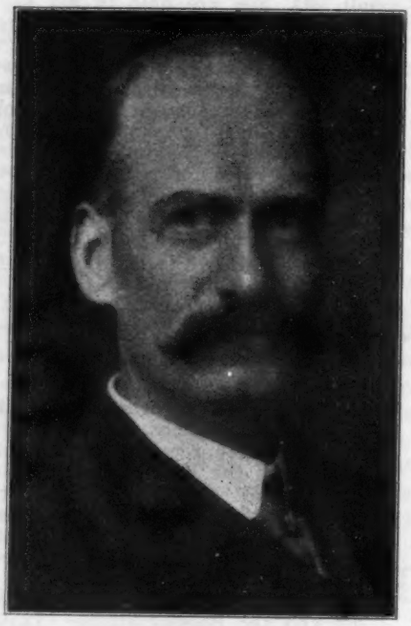
William E. Halm has resigned as president of the New York Dock Co., effective Dec. 31. He will devote his time to private affairs and travel.

Obituaries

GEORGE M. BASFORD. railroad publicist, engineer, and head of the G. M. Basford Co., New York, and consulting engineer for the Lima Locomotive Works, Inc., died in New York, Oct. 26. Mr. Basford was prominent in railroad circles, having been one of the organizers of the Railway Signal association. He was better known for his influence in the improvement of locomotive design and utilization. Mr. Basford was born in Boston in 1865 and following education in schools there was graduated from Massachusetts Institute of Technology in 1889. He entered the Charlestown shops of the Boston & Maine railroad, later going to Aurora, Ill., for the Chicago, Burlington & Quincy. From there he went to the Union Pacific and then to the Chicago, Milwaukee & St. Paul. He later served with the Johnson Railway Signal Co., and the Union Switch & Signal Co., afterward becoming signal engineer for the Hall Signal Co. In 1895 he became mechanical department editor of the *Railway and Engineering Review*, and in 1897 was made editor of the *American Engineer and Railroad Journal* now the *Railway Mechanical Engineer*. In September 1905 he was made assistant to the president of the American Locomotive Co., and in March 1913 became chief engineer of the railroad department of Joseph T. Ryerson & Son, Inc. In March 1916, Mr. Basford organized the G. M. Basford Co. to handle technical advertising. About this time he was made president of the newly organized Locomotive Feedwater Heater Co., which he headed until it was taken over by the Superheater Co.

* * *

Col. Azor R. Hunt, who in 1914 resigned as general superintendent of the Homestead steel works of the Carnegie Steel Co. after 27 years service with that company, died Nov. 2 in Dedham, Mass., aged 78. Colonel Hunt was born Aug. 22, 1848 at Canfield, O. From his early youth he was



GEORGE M. BASFORD

mechanically inclined. When 20 years old he went to Warren, O., where he learned the mechanic's trade and studied mechanical engineering. In 1887 he went to Homestead as night foreman in the beam department. Nine years later he was made superintendent of the plate mill department, in which capacity he served until 1901, when he became superintendent of the Duquesne steel works of the Carnegie company. In 1903 he returned to the Homestead works, as general superintendent, succeeding A. C. Dinkey.

* * *

Joseph Janson, president of the Janson Steel & Iron Co., Columbia, Pa., died in Hamburg, Germany. Oct. 20, from pneumonia, aged 73 years. He was born in Germany, coming to the United States when three years old, making his first visit to his native country in July this year. Mr. Janson was a prominent banker of Columbia, and with his brothers Frank and Valentine, in 1894, organized the Janson Steel & Iron Co.

* * *

Frank B. McCord, vice president and treasurer of Post & McCord, New York, steel erectors and general contractors, died Nov. 1 at a sanitarium in Morristown, N. J., aged 49 years. His death was due to kidney trouble, and followed an illness of about three months. Mr. McCord was born in New York and received his education in the public schools. Virtually his entire business career was spent with the Post & McCord organization of which his father, William H. McCord, was one of the two founders in 1877. He had been with the company more than 30 years. His home was in Flushing, L. I.

* * *

George Adams Post, president of the George A. Post Co., New York, manufacturer of railroad supplies, died Oct. 31, of heart disease at his home in Somerville, N. J. He was born in Cuba, N. Y., Sept. 1, 1854, and received his education in the public schools of Oswego, N. Y. He entered the railroad supply business in 1892 as vice president of the Standard Coupler Co., becoming president two years later. Mr. Post was chairman of the railroad committee of the United States chamber of commerce. He helped organize the Railway Supply Manufacturers association, and was the first president of the Railway Business association, holding the office for nine years. He was a member of the Machinery club, New York and other clubs.

Warehouse Trading Still Brisk

Stiffening Mill Prices Aid Jobbers to Hold Firm Quotations

WAREHOUSE trading continues brisk, October generally totaling a better volume than September. Stiffening in prices by mills on many iron and steel products is being reflected in the warehouse market, jobbers holding to the full list more uniformly.

Brisk trading still prevails in the New York district. Structurals, bars, plates and even sheets are moving in substantial volume. Of special significance is an inquiry for 100 tons of black sheets. Prices generally are strong, but unchanged. In some quarters, a further stiffening in sheet quotations is expected shortly.

October was the best month of the year at Philadelphia. Jobbers here state that the November outlook is good. Black and galvanized sheets have been advanced $2 a ton. Bars are easier.

More prompt deliveries are being required in the Pittsburgh district than mills are able to give and jobber demand consequently is increasing. Prices are expected to advance to keep pace with rising mill operations.

Buffalo warehouses report October a good month. Demand for sheets, small bars, structural and reinforcing is good. Prices are firm and unchanged.

Activity in the warehouse market at Cincinnati is on a broader scale than it has been for months. October sales with some jobbers virtually doubled bookings of previous months.

Except for wire and wire products, western warehouse prices evidence a tendency towards strength. An advance in bolt and nut prices may come within a few days, while sheets may soon reflect the new and higher mill prices. October business for western warehouses kept up to the August and September level.

No change is to be noted in the warehouse market conditions at Detroit. Demand continues strong, with the total movement for October considerably ahead of that for September.

Prices are stiffening at Cleveland warehouses but no list changes have been made yet, pending establishment of mill advances. One jobber reports October 25 per cent above that month in 1924 while another reports a drop in tonnage. Buying generally is brisk.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.15c
New York	3.24c
Philadelphia	3.05c to 3.20c
Pittsburgh	2.90c
Portland	2.85c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.05c to 3.20c
St. Louis	3.25c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago, billet	2.60c
Chicago, rail steel	2.00c to 2.10c
Cincinnati	3.30c
Cleveland	2.85c to 3.10c
Detroit	3.15c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	2.90c to 3.20c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c
Youngstown	2.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.80c to 3.20c
Pittsburgh	3.00c
Portland	2.85c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.15c
New York	3.34c
Philadelphia	2.80c to 3.20c
Philadelphia, 3/16-inch	3.00c to 3.40c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.00c
Detroit	3.65c
Los Angeles	3.70c
New York	3.89c
Philadelphia	3.35c
Portland	4.25c
San Francisco	3.70c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c

NO. 28 BLACK SHEETS

Boston	4.95c
Buffalo	4.40c
Chicago	4.00c
Cincinnati	4.55c
Cleveland	3.80c
Detroit	4.25c
Los Angeles	4.65c
New York	4.15c to 4.35c
Philadelphia	4.45c
Portland	5.25c
San Francisco	4.65c
Seattle	5.25c
St. Louis	4.50c
St. Paul	4.25c

NO. 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	5.45c
Chicago	5.00c
Cincinnati	5.65c
Cleveland	4.95c
Detroit	5.25c
Los Angeles (corr. 26 ga.)	5.75c
New York	5.15c to 5.35c
Philadelphia	5.55c
Portland	5.75c
San Francisco	5.75c
Seattle	6.25c
St. Louis	5.50c
St. Paul	5.25c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	4.25c
New York	3.99c
Philadelphia	3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.85c
Detroit	4.30c
New York	4.49c
Philadelphia	4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	3.95c	4.45c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.80c	4.30c
Detroit	3.75c	4.25c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	3.90c	4.40c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	3.75c*	.....
Seattle	4.75c*	.....
St. Paul	4.05c*	.....

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.15c
Buffalo	6.65c
Chicago	7.15c
Cincinnati	7.15c
Cleveland, over 500 pound lots	5.95c
Detroit	6.05c
New York	6.10c
Philadelphia	6.10c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL
New York, duty paid

Swedish hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE
Discounts from warehouse. New York City
Standard Steel Pipe
WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—23	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—40	—22
2½ to 6 inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
¼ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 9
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 3	+16

IF YOU have come together for mutual protection and benefit you have done a good day's work. In the steel business we used to guard our costs so closely we almost locked our books up at night for fear some clerk would divulge them. Now I'm a believer in telling every one our costs, providing every one tells us theirs.

I hope you have as much fun in business as I have had all my life. I haven't as much money as some of these follows, but I've made enough to live on. I'd rather be called fair and decent than to have made all the money in the world. If you are fair with your workmen and decent with all men you will have prosperity and happiness all your lives.—CHARLES SCHWAB, *to American Refractories institute, New York, Oct. 29.*

Refractories Institute's First Technical Sessions Prove Successful

ALTHOUGH less than a year old, the American Refractories institute which held its first technical sessions in New York Oct. 29 proved its right to a place among business associations by attracting more than 100 producers and users of refractory materials. The three meetings held in the morning, afternoon and evening were presided over by William C. Sproul, General Refractories Co., Philadelphia and former governor of Pennsylvania.

In introducing the purposes and plans of the institute, which was organized in April 1925, J. D. Ramsey, Elk Refractories Co., St. Marys, Pa. stated that the five factors, temperature, load, abrasion, slag action and specifications, all must be considered in recommending material for any specific service. Specifications place extreme requirements upon one or more of these elements, but seldom do they take all into account. He stated that the uneducated salesman, who promised the impossible in delivery and in performance, is a menace to the industry. He outlined the benefits of the institute through the interchange of information between manufacturer and users of refractories.

W. A. Carter, Detroit Edison Co., Detroit and Ralph Sherman, United States bureau of mines, discussed the temperature and conditions which must be met in boiler operation under varying conditions of construction, fuel and firing.

S. M. Phelps, Mellon institute, Pittsburgh, gave the results of experiments on the manufacture of refractories from diaspore, a material containing 72 per cent of aluminum oxide, Al_2O_3.

In a paper presented at the afternoon session outlining the probable trend of specifications, J. S. McDowell, Harbison-Walker Refractories Co., Pittsburgh, stated that two considerations should govern. He believes that specifications should state the physical properties within economic limits and that service requirements should govern. Many refractories are shipped upon the user's insistence, that are not capable of meeting the service requirements, although they comply with the specifications. He cited the dearth of knowledge of operating demands such as in the case of cupola blocks where the temperature condition is practically the only known factor. The demand for special shapes to meet varied designs places a tax of more than $1,000,000 annually on the producer for molds alone.

M. C. Booze, Mellon institute, Pittsburgh, acting secretary of the refractories organization traced the development of test and research study at the institute through the fellowship established in 1917 by the organization of refractories manufacturers and various other agencies. Control tests have been devised and more than 30 separate research studies have been instituted. This work is carried on under direction of an advisory committee made up of P. S. Kier, Kier Firebrick Co., Pittsburgh, chairman and the following members: J. S. McDowell, Harbison-Walker Refractories Co., Pittsburgh; C. C. Edmunds, McLain Firebrick Co., Pittsburgh; E. H. Van Schoick, Chicago Retort & Firebrick Co., Chicago; L. C. Hewitt, LaClede Christy Clay Products Co., St. Louis; C. E. Bales, Louisville Firebrick Co., Louisville, Ky.; W. E. Dornbach, General Refractories Co., Philadelphia; S. M. Phelps and M. C. Booze, Mellon institute, Pittsburgh.

At the banquet held at the Waldorf-Astoria in the evening, C. M. Schwab, Bethlehem Steel Corp. stated that the first basic refractory material was used under his direction in lining No. 1 open-hearth furnace Homestead. This work was done by an experienced man, a Scotchman by the name of Purvis, who was brought to this country for the purpose. Today more than 90 per cent of the steel made is produced on basic bottoms. Mr. Schwab commended the co-operative effort typified by the refractories institute, advised a free interchange of information and remarked that in the early days in the steel business, the cost books were so guarded that the books were locked in the safe for fear some clerk would return to the office at night and steal information. He stated that today the phase of business having to do with return is more important than that of produciton, and urged the comparison of costs and a study of the users needs.

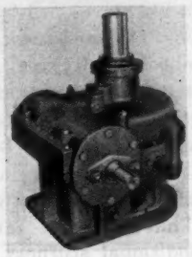
Elisha Lee, vice president in charge of operation, Pennsylvania railroad system, in some observations on the present hand-to-mouth buying with meager yard stocks remarked that a plant on his line was shut down because an incoming freight train with a shipment of raw materials was three hours late. Prompt freight handling has cut down the stocks maintained, and less capital is tied up in materials on the yard and in transit than ever before. Mr. Lee stated the railroads request that the coming congress give full support to measures that are fair and proper.

George Wharton Pepper, senior senator from Pennsylvania, in the concluding address, stated he does not fear the currents that tend to undermine American religous, social and political life. He sees no cause for pessimism in the destructive tendencies of the day. The decline of authority already has brought a swing back, typified in political results.

Reducing Gear Has Vertical Shaft

No. 213

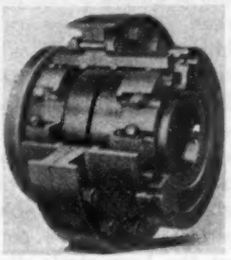
The De Laval Steam Turbine Co., Trenton, N. J., is marketing a worm reduction gear for vertical shaft drives. The gear casing supports the worm bearings and the lower bearing of the driven shaft. The oil level permits the worm and gear wheel to dip into it, while the lower wheel shaft is immersed. For large reductions, where worms have high speed, a positive pressure lubrication system feeds oil at contact points.



Coupling Corrects Shaft Alignment

No. 216

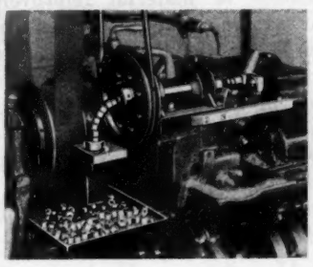
Farrel Foundry & Machine Co. Inc., Buffalo, is now marketing a universal shaft coupling which operates even when connecting shafts are misaligned. Limit of angularity is 5 degrees and shafts offset 4 per cent of their size may be connected. There are three main parts, two in the hub form, and one made in halves to form a connecting sleeve. All parts are made of hardened steel. The coupling is designed to give torsional resiliency.



Threads Parts on Screw Machines

No. 214

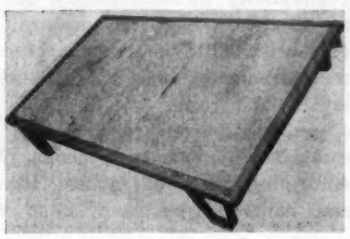
The Automatic Nut-Thread Corp., Buffalo, is putting on the market an automatic attachment for threading small parts as formed on screw machines. It eliminates using reverse drive and independent tapping machine. A plunger enters the nut as soon as drilled, and when it is cut off immediately swings it to the threading attachment. The floating type tap always is full of nuts.



Loading Skids Bound with Steel

No. 217

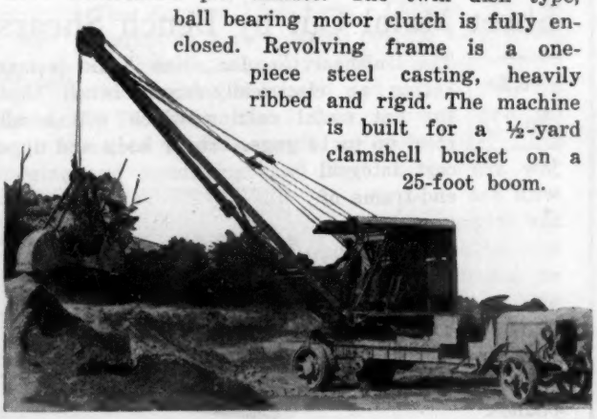
The Wilder-Strong Implement Co., Monroe, Mich., is marketing a lift truck platform with a new feature, a one-piece binding angle completely encasing the top boards, protecting the four sides, and giving round corners. This angle is welded, giving solid top construction. Two bottom guide angles insure strength and rigidity. No nails are used and the planking is hard maple. Steel angle feet are used.



Truck Crane Is Compactly Built

No. 215

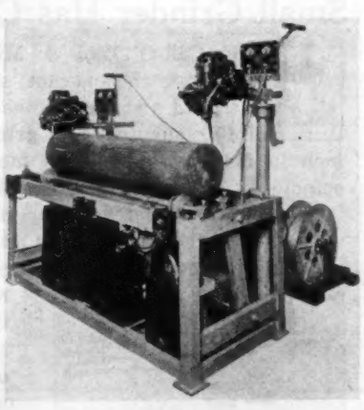
The Harnischfeger Corp., Milwaukee, is manufacturing a new truck and trailer crane. It has a line speed of 125 feet per minute and a swing speed of 5 revolutions per minute. All three drums are mounted on one shaft, increasing compactness. All main machinery is behind the center pin, giving better balance. There are but four shafts, eleven main gears and a set of planetary gears on the entire machine. Tail swing is 7 feet 1½ inches with overall width of 8 feet 4 inches. Total weight is 13,000 pounds, excepting the truck. Revolving frame and drum bearing frames are of cast steel. All shafts, gears, rollers, drum clutches and brakes are readily accessible. It is operated by a 4-cylinder 40-horsepower motor at 1000 revolutions per minute. The twin disk type, ball bearing motor clutch is fully enclosed. Revolving frame is a one-piece steel casting, heavily ribbed and rigid. The machine is built for a ½-yard clamshell bucket on a 25-foot boom.



Electric Tank Welder Is Automatic

No. 218

The General Electric Co., Schenectady, N. Y., has added to its automatic arc welding equipment two separate machines, one designed for longitudinal seam and the other circular seam work. Tank sizes from 11 to 33 inches in diameter and up to 6 feet long can be accommodated. The longitudinal machine is specially designed for rapid production, a pneumatic clamping device operated by a small lever gripping or releasing the work automatically. The machine for circular welding revolves automatically while both ends are being welded. The operating cycle is simple. The sheet metal of the tank proper is rolled as for riveting, tack welded in two places and inserted in the longitudinal welding machine which completes the seam. The circular machine then welds both heads and bottoms at once. Specially trained employes or experienced welders are not needed to operate these machines. A hand welder is usually employed for welding both inlet and outlet nipples.



Obsolete Equipment Is Being Replaced

(*Concluded from Page* 1156)

ter, the base circle of the involute tooth curves, and the lead of the helical guides. The first two are fixed when the cutters are made and the third when the guides are made. Thus with one pair of cutters it is possible to cut a variety of different pitches because the pitch of involute gears depends on the distance between the axis of any pair. The cutters themselves determine the base circle diameter which will be cut on any gear, but the base circle diameter does not determine the pitch circle diameter.

A new heavy-duty planer announced by Niles-Bement-Pond Co. and described as No. 205 was designed with the object of providing a unit that can be operated with ease, safety and a minimum of time. It is built in 36, 42 and 48-inch sizes. For the sake of simplicity in construction, the motor at the end of the crossrail has been utilized to power traverse the crossrail heads and side heads, to elevate and lower the crossrail and to provide power for feeding the crossrail heads and side heads. While performing these operations, the motor is controlled by the pendent switch and the table dogs. The pendent switch is employed for stopping the machine instantly, inching the table back and forth, controlling the amount of travel to the heads and tool slides, controlling the amount of elevating or lowering of the crossrail and starting the table travel and automatic feed.

Another planer just placed on the market is an open-side model built by the Cincinnati Planer Co. and described as No. 206. It is notable in that it embodies all the features used on the double housing planer in addition to several new ones. Complete control of the machine is from the operator's position. All heads can be controlled from one handle or from independent handles placed on the end of the rail or on each side head. Unusual consideration has been given the oiling system which is of the forced feed type.

Builds Special Lathe

To satisfy the demand for a lathe for turning the face and back angles of heavy bevel gears made of alloy steel, the Consolidated Machine Tool Corp. has designed a special lathe, which is described as No. 208. On the 6-foot bed is mounted a heavy carriage carrying two independent cross slides. Each slide has a revolving 4-way steel turret tool post which carries four tools simultaneously. Swing over the bed is 31 inches; over the carriage it is 22 inches, while the tool slides have a travel of 8½ inches.

A new press brake developed by the Cincinnati Shaper Co. and described as No. 212 embodies all steel construction, a feature which insures a minimum deflection in making bends. The two housings are cut from 3-inch steel plate and finished to 2¾ inches. The ram and bed are cut from similar material and have heavy angles welded on for additional stiffness. The top of the bed is made from a steel billet machined in the shape of a saddle and solidly welded to the main plate. It has a capacity for making a right angle bend in No. 10 gage steel 10 feet long.

Wilmarth & Morman Co. have made a number of material improvements in a surface grinder which it manufactures. This improved model is described as No. 211. The motor is placed in the base or the unit and is connected to the ball bearing drive spindle through a flexible coupling. A ball bearing clutch is used and roller and ball bearings have replaced the former bronze bearings.

Recording Meter Has High Torque

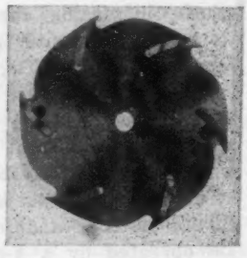
No. 219

The General Electric Co., Schenectady, N. Y., has introduced a new type curve drawing instrument of high torque. Damping is unaffected by temperature and is sufficient for rapidly fluctuating loads, such as electric furnaces. The instruments, for alternating current, have high voltage capacity and small internal losses. Chart speeds of 1, 3, 6 or 12 inches per hour are possible. The line includes ameters, voltmeters and single and polyphase wattmeters.

Circular Saw Has Inserted Teeth

No. 221

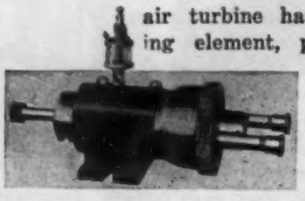
Henry Disston & Sons, Inc., Philadelphia, now are manufacturing an inserted tooth saw for grooving, molding, heading and tenoning. The high-speed tool steel teeth are locked in sockets arranged spirally in the blade and are easily removable. They are set to give clearance without swaging or setting. Compensation for wear is possible, a locked rack providing an exact tooth adjustment. The teeth only are touched in sharpening.



Small Grinder Has Constant Speed

No. 220

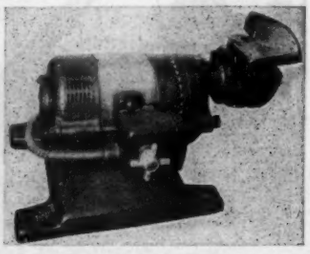
Ex-Cell-O Tool & Mfg. Co., Detroit, has put on the market a new governor controlled and air turbine driven grinding spindle, adapted for grinding holes ¼ to 1 inch in diameter. Speed is maintained whether the spindle is cutting or idling. An electric relay and solenoid valve operate the governor. The air turbine has but one simple rotating element, permitting accurate running balance. The controlled ball bearing spindle gives continuous high speed without looseness.



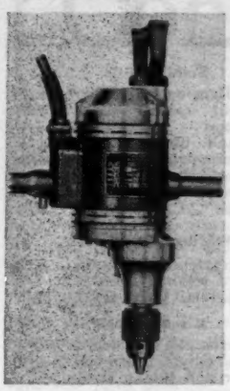
Sheet Metal Cut by Bench Shears

No. 222

The Unishear Co., Inc., New York, is marketing an electrically-driven bench shear for flat metal cutting which will handle steel up to 14 gage. Shear body and upper jaw are cast integral with one end-frame of the driving motor, operating on alternating or direct current at 5000 revolutions per minute. Total knife length is 2 inches. The shear weighs 38 pounds.



Electric Drill Has High Capacity



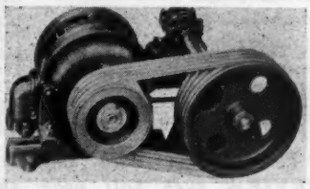
No. 223

The Hisey-Wolf Machine Co., Cincinnati, is manufacturing a standard duty universal electric drill of ⅝-inch capacity in steel. The motor operates at 500 revolutions per minute on 115 or 230-volt current. The chuck is fitted to hardened and ground tapered oversize spindle automatically lubricated. Forced ventilation must pass over commutator and motor.

Designs Drive for Short Centers

No. 224

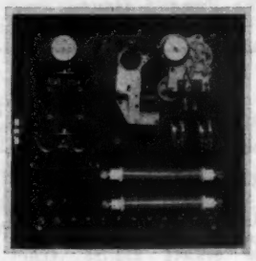
The Allis-Chalmers Mfg. Co., Milwaukee, recently has perfected a new type short center, flexible drive, consisting of two grooved sheaves and specially constructed endless "V" belts, which fit the grooves without tension or slack. These belts will stretch, thus avoiding jerks and vibration. The drives are available from ½ to 250 horsepower with ratios up to 7-1 and belt speeds of 800 to 6000 feet per minute.



Device Prevents Power Overloads

No. 225

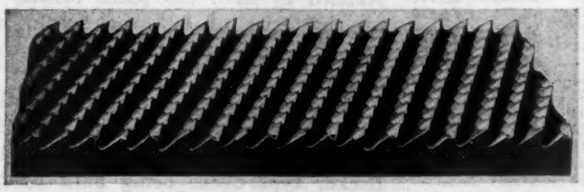
Edward T. Moore, Syracuse, N. Y., recently has introduced a power demand limitator for automatically controlling large power leads. A wattmeter element is connected to current and potential transformers at the main metering point, and an electromagnetic mechanism actuates periodically, depending on the demand period. It is claimed that the limitator will improve the load factor by reducing peaks and will prevent overloads.



New File Teeth Prevent Clogging

No. 226

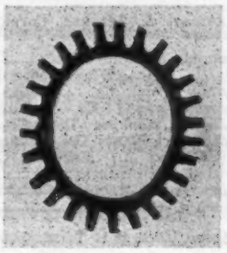
The Service Tool Corp., Latrobe, Pa., is marketing a new double cut file using teeth made with a positive rake or undercut on the front of the teeth and double slope on the back. They are milled from solid stock alloy steel. Grooves between teeth are deep, preventing clogging and permitting sand blast sharpening.



Lock Washer Is Positive In Action

No. 227

The Illinois Tool Works, Chicago, is manufacturing a new lock washer consisting of a thin ring of hardened steel in the shape of a small gear with teeth slightly upset so that when pressed between a metal surface and nut they will dig into the softer metal, preventing vibration and making it impossible for the nut to work loose again. These washers are made in all sizes and are suitable for practically all classes of industrial machinery.



Index of New Equipment Described in This Issue

No.	Equipment	Manufacturer	Page
205.	Planer	Niles-Bement-Pond Co.	1154
206.	Planer	Cincinnati Planer Co.	1154
207.	Scraper bucket	Hayward Co.	1155
208.	Gear lathe	Consolidated Machine Tool Corp.	1155
209	Power stacker	Lewis-Shepard Co.	1155
210.	Gear generator	Farrel Foundry & Machine Co.	1155
211.	Surface grinder	Wilmarth & Morman Co.	1156
212.	Bending brake	Cincinnati Shaper Co.	1156
213.	Speed reducer	De Laval Steam Turbine Co.	1193
214.	Threading device	Automatic Nut-Thread Corp.	1193
215.	Truck crane	Harnischfeger Corp.	1193
216.	Flexible coupling	Farrel Foundry & Machine Co.	1193
217.	Skid platform	Wilder-Strong Implement Co.	1193
218.	Tank welder	General Electric Co.	1193
219.	Recording meters	General Electric Co.	1194
220.	Internal grinder	Ex-Cell-O Tool & Mfg. Co.	1194
221.	Inserted tooth saw	Disston, Henry, & Sons	1194
222.	Bench shear	Unishear Co., Inc.	1194
223.	Electric drill	Hisey-Wolf Machine Co.	1195
224.	Flexible drive	Allis-Chalmers Mfg. Co.	1195
225.	Demand limitator	Moore, Edward T.	1195
226.	Hand file	Service Tool Corp.	1195
227.	Lock washer	Illinois Tool Works	1195

Machine Tools Introduced in 1925 (By Manufacturers)

	Issue
Allis-Chalmers Mfg. Co.	10/1, 11/5
American Hoist & Derrick Co.	10/1, 10/1
Atkins, E. C., & Co.	8/6
Automatic Nut-Thread Corp	11/5
Baker Brothers, Inc.	8/6
Berry Automatic Lubricators Corp.	8/6
Bignall & Keeler Machine Works	10/1
Blettner, Geo. H., Co.	9/3
Blum, Julius, & Co.	7/2
Borden Co.	10/1
Campbell, Andrew Co., Inc.	7/2
Chambersburg Engineering Co.	8/6
Champion Locknut Corp.	10/1
Chicago Fuse Mfg. Co.	9/3
Chicago Pneumatic Tool Co.	8/6, 8/6
Cincinnati Milling Machine Co.	9/3, 9/3
Cincinnati Planer Co.	10/1, 11/5
Cincinnati Shaper Co.	11/5
Cleveland Stone Co.	7/2
Cleveland Worm & Gear Co.	8/6
Cochrane-Bly Co.	10/1, 10/1
Consolidated Machine Tool Corp.	11/5
Cutler-Hammer Mfg. Co.	7/2, 8/6
De Laval Steam Turbine Co.	11/5
Disston, Henry, & Sons	11/5
Elwell-Parker Electric Co.	9/3, 10/1
Engelhard, Charles, Inc.	9/3
Erie Foundry Co.	9/3
Ex-Cell-O Tool & Mfg. Co.	11/5
Excelsior Tool & Machine Co.	7/2
Farrel Foundry & Machine Co.	11/5, 11/5
Ferner, R. Y., Co.	10/1
Fulton Drop Forge Co.	8/6
General Electric Co.	7/2, 11/5, 11/5
Gilmer, L. H., Co.	10/1
Gisholt Machine Co.	9/3
Gray, G. A., Co.	10/1
Harnischfeger Corp.	11/5
Haynes Stellite Co.	8/6

No.	Issue
Hayward Co.	11/5
Hisey Wolf Machine Co.	8/6, 11/5
Hoefer Mfg. Co., Inc.	7/2
Illinois Tool Works	11/5
Ingersoll-Rand Co.	7/2
Kearney & Trecker Corp.	9/3
Landis Machine Co.	7/2, 8/6, 10/1
Landis Tool Co.	8/6, 9/3
Lewis-Shepard Co.	11/5
Liberty Machine Tool Co.	7/2
Liftsaver Mfg. Co.	9/3
Littell, F. J., Machine Co.	10/1
Logansport Machine Co.	10/1
Luehrs Co.	7/2
Moore, Edward T.	11/5
Niles-Bement-Pond Co.	7/2, 8/6, 11/5
Oliver Instrument Co.	10/1
Oxweld Acetylene Co.	7/2
Pangborn Corp.	9/3
Porter-Cable Machine Co.	10/1
Pratt & Whitney Co.	7/2, 8/6
Pyle-National Co.	10/1
Rockford Machine Tool Co.	9/3
Ryerson, Joseph T., & Son, Inc.	8/6, 10/1
Service Tool Corp.	11/5
Sutton-Abramsen Engineering Co.	7/2, 8/6, 9/3
Timken Roller Bearing Co.	10/1
Unishear Co. Inc.	11/5
Vulcan Iron Works	7/2
Watson-Stillman Co.	10/1
Westinghouse Electric & Mfg. Co.	8/6
Wilder-Strong Implement Co.	11/5
Williams, J. H., & Co.	9/3
Williams Tool Corp.	7/2, 7/2
Wilmarth & Morman Co.	11/5
Wilson-Maeulen Co., Inc.	8/6

Machine Tools Introduced in 1925 (By Products)

No.	Issue
Boring and Reaming Machines	
132. Differential housing	7/2
151. Double spindle	8/6
156. Electrically driven	8/6
Drills	
192. Drilling, boring and tapping	10/1
223. Portable electric	11/5
148. Portable pneumatic	7/2
139. Special drill and tapping	7/2
Grinders	
135. Belt	10/1
193. Drill	10/1
143. Heavy-duty foundry	7/2
220. Internal bench	11/5
142. Multiple wheel automatic	7/2
163. Portable electric	8/6
157. Steel mill roll	8/6
211. Surface	11/5
191. Thread	10/1
167. Vertical production	8/6
Lathes and Automatics	
208. Gear turning	11/5
150. Special	8/6
175. Thread cutting	9/3
214. Threading attachment	11/5
Material Handling Equipment	
203. Collapsible bag	10/1
189. Furnace charging truck	10/1
144. Gasoline locomotive	7/2
178. Hand truck	9/3
173. Lift truck	9/3
209. Power stacker	11/5
207. Scraper bucket	11/5
217. Skid platform	11/5
215. Truck crane	11/5
Milling Machines	
170. High power	9/3
176. High power	9/3
174. Improved type	9/3
152. Thread	8/6
Pipe Machinery	
141. Portable threader	7/2
200. Portable threader and cutter	10/1
136. Threader	7/2
137. Threader	7/2
186. Threader and cutter	10/1
Planers	
183. 48-inch	10/1
205. Heavy duty	11/5
184. Open-side	10/1
131. Open side	7/2
206. Open side	11/5
133. Safety features	7/2
Presses, Brakes, etc.	
196. Air work ejector	10/1
190. Automatic magazine feed	10/1
212. Bending and forming	11/5
177. Board drop hammer	9/3
153. Hydraulic	8/6
194. Hydropneumatic forcing	10/1
Punches, Shears and Riveters	
222. Bench shear	11/5
138. Nibbling machine	7/2
135. Punch and shear	7/2
Saws	
188. Cold	10/1
195. Cut-off	10/1
164. Hacksaw blade	8/6
149. High-speed	8/6
221. Inserted tooth	11/5
Shapers	
168. Constant speed drive	9/3
Small Tools	
159. Collapsing valve tools	8/6
145. Drill speeder	7/2
162. Gages	8/6
226. Hand files	11/5
180. Power reamer	9/3
182. Steel clamps	9/3
199. Threading die head	10/1
166. Vise	8/6
Welding Equipment	
147. Acetylene generator	7/2
134. Arc welding set	7/2
218. Electric tank	11/5
Miscellaneous	
158. Automatic starters	8/6
169. Balancing machine	9/3
140. Bar and tubing straightener	7/2
225. Demand limitator	11/5
198. Electric ring heater	10/1
187. Electric rivet heater	10/1
197. Electric motor	10/1
216. Flexible coupling	11/5
224. Flexible drive	11/5
201. Floodlight projector	10/1
210. Gear generator	11/5
155. Grease cup	8/6
146. Hoist control	7/2
204. Lock nut	10/1
227. Lock washer	11/5
179. Recording meter	9/3
219. Recording meters	11/5
181. Renewable fuse	9/3
202. Roller bearing	10/1
172. Sand blast barrel	9/3
165. Speed reducer	8/6
213. Speed reducer	11/5
154. Straightening machine	8/6
171. Straightening machine	9/3
160. Switchboard	8/6
161. Testing machine	8/6

To conform with indexing of IRON TRADE REVIEW each half year, the machine tool index for the first half of 1925 *was closed in June and the new index will be carried forward until the close of the year. The consecutive system of numbering, however, will be carried out throughout the entire year in order that a recapitalization may be published next January. The machine tool index for the first half of* 1925 *will be found on Page* 1493 *of the June* 4 *issue.*

Truck Production Makes Large Gain

Washington, Nov. 3.—The production of automobiles in September recovered from the low point touched in August, due to the delay experienced by the Ford plants in inaugurating new models. September production in the United States and Canada amounted to 272,396 passenger cars and 60,363 trucks, of which 262,036 passenger cars and 57,883 trucks were made in the United States. The feature of the production record as reported by the department of commerce was a new high record for truck production. This was accounted for by increases in the output of Ford factories, other makers showing only a small gain over August. Truck production is at high levels, however, demand coming particularly from the building industry and from Florida where freight embargoes are in effect.

Passenger car output is being seasonally reduced by some producers. Figures by months follow:

Passenger Cars

	1922 Total	1923 Total	1924 Total	1925 Total
Jan.	84,189	228,860	293,822	212,908
Feb.	112,755	260,320	343,444	252,785
March	157,839	327,038	357,006	332,151
April	202,567	351,622	346,355	391,802
May	238,462	358,646	286,266	382,714
June	268,501	343,985	225,034	364,806
July	228,456	303,497	244,503	358,554
Aug.	252,795	318,848	255,193	221,813
Sept.	190,867	302,340	263,468	272,396
Oct.	219,919	338,469	260,845	
Nov.	217,953	288,810	204,316	
Dec.	210,692	279,862	182,028	
Total	2,384,995	3,702,297	3,262,280	2,789,463

Trucks

	1922 Total	1923 Total	1924 Total	1925 Total
Jan.	10,005	20,506	30,627	28,141
Feb.	13,853	23,283	32,756	34,410
March	20,631	36,619	36,270	45,098
April	23,429	39,641	37,766	47,822
May	24,880	45,677	35,112	43,303
June	26,962	42,453	28,884	38,054
July	22,507	31,703	26,227	41,773
Aug.	25,273	32,195	28,503	37,713
Sept.	19,905	29,626	31,829	60,363
Oct.	22,446	31,515	32,332	
Nov.	22,522	29,166	27,766	
Dec.	20,911	28,862	27,324	
Total	253,324	391,246	375,426	276,027

Awards Contract for 60 More Coke Ovens

Pittsburgh, Nov. 3.—The Jones & Laughlin Steel Corp. has awarded to the Wilputte Coke Oven Corp. a contract for the construction of another battery of 60 coke ovens at the by-product plant in Hazelwood. The value of the contract is placed at close to $1,000,000.

The addition will bring the total number of ovens at the Hazelwood by-product plant to 300. When the coke making plant in the city was originally projected by the steel company during the world war, it was planned to have the plant consist of five batteries of 60 ovens each, but only four of the batteries were constructed.

The Jones & Laughlin corporation in addition now has under construction at its Aliquippa works, 122 Becker type ovens being built by the Koppers Co.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

Where additional information is presented, reference is made to date of issue in which previous item appeared.

GADSDEN, ALA.—Wetter Pipe Co., is completing and will start operations shortly in its new cast iron pipe and soil fittings plant.

GADSDEN, ALA.—Agricola Furnace Co. has let a contract for its main foundry building and warehouse to Ingalls Iron Works Co., 720 Avenue D., Birmingham, and various equipment contracts have been let.

BERKELEY, CALIF.—Steel Tank & Pipe Co., 1100 Fourth street, will build a 4-story plant.

BERKELEY, CALIF.—Solano Iron Works, Third street and Allston way, will build a 1-story plant at Ninth and Parker streets.

BERKELEY, CALIF.—Hall Scott Motor Co. Inc. will build a 1-story plant for manufacture of marine and air motors, axles and truck engines, at Snyder and Fifth streets.

LOS ANGELES—Schumacher Wall Board Corp. of Los Angeles, San Pedro and Fifty-eighth streets, will buy additional equipment for its machine shops.

OAKLAND, CALIF.—Laher Auto Spring Co., 714 East Pike street, Seattle, will build 1-story plant at Twenty-sixth and Magnolia streets.

OAKLAND, CALIF.—Diamond G Co., R. H. Green manager, 432 Lincoln avenue, will build a 1-story plant at Twenty-fourth and Magnolia streets for manufacture of electrical specialties.

SAN FRANCISCO—McCormick Bros. Iron Works, Main and Folsom streets, was partially burned recently.

SAN FRANCISCO—Pacific Coast Steel Co. has leased 58 acres in Monterey county, where a limestone quarry will be opened and equipped for production of dolomite.

SAN FRANCISCO—Joseph Gerrick & Co., Call building, has been incorporated to engage in steel construction and fabricating work, specializing in railroad bridge work, by Joseph Gerrick and others. Mr. Gerrick was in the firm of Gerrick & Gerrick, Seattle, 26 years.

BRIDGEPORT, CONN.—Bridgeport Switch Co. has removed its plant from 169 Carroll avenue to 209 Center street. It is to be incorporated with $50,000 capital and will enlarge its line of electrical apparatus.

HARTFORD, CONN.—Spencer Turbine Co. 484 New Park avenue, will build a 2-story plant 43x152 feet for the manufacture of organ blowers.

STAMFORD, CONN.—Automatic Electric Clock Co. Inc., Mark A. Standow manager, 172 Myrtle avenue, has been organized to manufacture electric clocks for automobiles and will build a plant.

COLUMBUS, GA.—Lummus Gin Co., F. Edward Lummus general manager, has let a contract to the H. K. Ferguson Co., Cleveland, for a 1-story machine shop 130 x 220 feet, to increase capacity 25 per cent.

OROFINO, IDAHO.—Northern Pacific railroad, Fifth and Jackson streets, St. Paul, Minn., has awarded contract to Twohy Brothers, Spokane, Wash., on 40-mile extension through the Clearwater timber district.

CHICAGO—Olive Can Co., 450 North Leavitt street, will build a 1-story addition 51 x 55 feet. A. E. Strobel, 110 South Dearborn street, is architect.

CHICAGO.—Eagle Tank Co., W. O. Olsen president, 2450 North Crawford avenue, will build a plant at Kildare and Wellington avenues during 1926.

CHICAGO.—American Iron Wire Co., J. W. Scott president, 1622 Carroll avenue, will build a 2-story addition 35x150 feet. H. E. Stevens, 4022 Madison street, is architect.

CHICAGO—Link-Belt Co., 300 West Pershing road, is in the market for a traveling crane, large punches and shears as equipment for its steel shop addition 120 x 260 feet.

CHICAGO.—R. D. Binks Spray Equipment Co., H. D. Binks vice president, 3124 Carroll avenue, will build a 2-story addition 34x97 feet.

ROCKFORD, ILL.—L. L. Rogers Co. Inc., 314 Brown building, South Main street, has been incorporated with $25,000 capital to manufacture electrical devices and apparatus by Marion S. Phelps, Sam Stites, and L. L. Rogers. Walker F. Hull, 129 North Main street, is attorney.

ANDERSON, IND.—Machinery for the new rolling mill addition to the plant of the Ames Shovel Works will be removed shortly from Beaver Falls, Pa. Operations are expected to start about Dec. 1.

COLUMBUS, IND.—Cummins Engine Co., through William G. Irwin, has bought 14 acres as a site for a new plant of 20,000 square feet.

HAMMOND, IND.—Bendix Brake Co., 401 North Anthony street, will start work soon on the second and third units of its plant.

INDIANAPOLIS, IND.—Peerless Foundry Co. will rebuild burned portion of its plant here.

MUNCIE, IND.—Coulter Boiler & Sheet Iron Co. has been incorporated with $5000 capital to manufacture sheet steel and metal products by Samuel P. Coulter, Paul F. Mauzy, William W. Coulter and William R. Hyde.

SOUTH BEND, IND.—Studebaker Corp. has let contract to Ralph Sollitt Construction Co. for a 4-story addition 180 x 460 feet for the automobile spring department. A 10-ton traveling crane will be required.

COUNCIL BLUFFS, IA.—Union Pacific railroad has awarded general contract to P. J. Sullivan, Council Bluffs, for 2-story, fireproof warehouse.

DUBUQUE. IA.—Klauer Mfg. Co., manufacturers of metal products, will build an addition at Iowa and Fourteenth streets.

DUBUQUE, IA.—International Harvester Co. contemplates building a factory. M. F. McCarty is local manager.

DUBUQUE, IA.—Dubuque Electric Co., subsidiary of Interstate Power Co., will build an addition to its power plant to cost $500,000.

MARSHALLTOWN, IOWA.—Lennox Furnace Co. will build an addition 80x100 feet. General contract to Leon Will, Marshalltown.

WATERLOO, IA.—Moore Construction Co., manufacturers of steel tanks and sheet metal products, will build an addition and remodel factory which burned recently.

BATH, ME.—Watson, Frye Co., manufacturer of papermill machinery, will enlarge its plant to accommodate the equipment of the Bangor Iron Works, Bangor, Me., which it recently bought. The patents, patterns and entire business of the latter were also purchased.

BALTIMORE, MD.—Monumental Machine Co., J. W. Sims president, 3505 Elliott street, is having preliminary sketches made for a 2-story plant to be built next spring.

BOSTON—Underhill Bros. Tool Co., Cummins street, Somerville, is rebuilding burned portion of its plant.

BOSTON.—Newton Machine Screw Co., 10 Crafts street, Newtonville, will build a 1-story machine shop 40x100 feet at 227 California street.

FRAMINGHAM, MASS. — Manufacturing Equipment & Engineering Co., Marble street, is building a 1-story plant 60x200 feet.

SPRINGFIELD, MASS. — Rolls-Royce of America Inc. will build an addition to its metal body plant on Waltham avenue.

WESTFIELD, MASS.—H. B. Smith Co., 640 Main street, Cambridge, will build a 1-story machine shop 111x210 feet. French & Hubbard, 210 South street, Boston, are engineers.

DETROIT—Triangle Tool & Pattern Co., 207 Brady avenue, will build a 1 and 2-story plant 50 x 100 feet.

DETROIT.—Budd Mfg. Co., Philadelphia, will build a 4-story plant 100x750 feet on Charlevoix avenue for finishing steel automobile bodies.

DETROIT.—Packard Motor Car Co., Alton Macauley president and general manager, 155 East Grand boulvevard, will build a 1-story machine shop.

DETROIT—Reliable Tool & Die Co., 734 Mount Elliott avenue, George Langtry president, is building a 1-story addition. Bennage & McKinstry, Morgan building, have the general contract.

DETROIT.—Cadillac Oil Burner Co. has been incorporated with $100,000 capital to manufacture oil burning devices by R. A. Skinner, A. L. Cornelius and James T. Driver, 903 Atkinson avenue.

DETROIT—Budd Wheel Corp., Charlevoix avenue, is taking bids to Nov. 10 for a group of buildings for automobile wheel production, including 2-story press building 121x371 feet, 3-story hub building 129x696 feet and unloading dock 51x440 feet. Manufacturing, conveying and handling equipment will be required.

GRAND RAPIDS, MICH.—American Brass Goods Co. has started construction of a new plant, the first unit to be completed this fall.

MARQUETTE. MICH.—City of Marquette is

Industrial Business Changes

CHICAGO BRIDGE & IRON WORKS has opened a sales office at 963 Union Trust building, Cleveland, in charge of George S. Sangdahl, district sales manager, assisted by A. W. Warren. The new office will have supervision of territory including Ohio, West Virginia, Kentucky east of Frankfort and New York, Pennsylvania and Maryland, east of a line running south from Buffalo, N. Y. The company now has sales offices in Cleveland, Chicago, New York, Atlanta, Dallas, San Francisco, Seattle, Winnipeg, Montreal and Toronto.

* * *

Federal Cement Tile Co., 608 South Dearborn street, Chicago, has appointed C. B. Baird branch sales manager in charge of a new office established at Indianapolis, Ind. The company's plant is at Hammond, Ind.

* * *

Horace T. Potts & Co., Philadelphia, have been appointed warehouse distributor by Union Drawn Steel Co., Beaver Falls, Pa., and are taking over a large part of the stock carried by the latter at their Philadelphia warehouse, which they are now discontinuing.

* * *

Kanawha Specialty Co. Parkersburg, W. Va., C. W. Pettigrew general manager, has bought the plant and business of the Fuel City Mfg. Co., manufacturer of tools and metal stampings, and will enlarge its facilities.

* * *

W. C. West Co., 14 East Jackson boulevard, Chicago, has been appointed district representative for the Decatur Malleable Iron Co., Danville Malleable Iron Co. and the Allith-Prouty Co., Danville, Ill., manufacturer of hardware specialties.

* * *

The Lehigh Structural Steel Co. has moved its New York office from 29 Broadway to 17 Battery Place, Room 1143. L. G. Neiman is in charge.

* * *

Acme Mfg. Co., Detroit, manufacturer of automatic buffing machines, has appointed Manufacturers Sales Co. of Ohio, Fred A. Latham manager, 362 Colonial Arcade, Cleveland, its representative. The latter also represents the I. G. Haskins Co., flexible shaft equipment, Forbes & Myers, electrically driven grinders, Met-L-Wood Corp., armored trucks and the Service Castor & Truck Co., ball bearings and castings.

* * *

Standard Floor Machine Co., 2 St. Clair place, New York, has been incorporated under the name of the Standard Terrazzo Rapid Grinder Corp., with $20,000 capital.

* * *

Brown Instrument Co., Philadelphia, has opened sales offices at 215 East New York street, Indianapolis, Ind., in charge of J. R. Green and at room 1108 Hippodrome building, Cleveland, in charge of G. S. Frazee.

* * *

Shadbolt & Boyd Iron Co., Milwaukee, has changed its name to the Shadbolt & Boyd Co. Price M. Davis is president and John S. Blakney secretary.

* * *

Waukesha Steel Products Co., Waukesha, Wis., has changed its name to the Century Fence Co., to identify it with its principal product.

* * *

Star Brass Co., 3114 Carroll avenue, Chicago, has changed its name to the Binks Spray Equipment Co. M. Sullivan is general manager and H. D. Binks president and treasurer.

* * *

The Union Drawn Steel Co. has discontinued its Philadelphia warehouse and has turned over its stocks there to Peter A. Frasse & Co. and Horace T. Potts & Co., its representatives in the district.

* * *

The DuPont Everdur Co. has appointed Horace T. Potts & Co. as its Philadelphia agents for the sale of its non ferrous anti-corrosion metal.

* * *

R. S. Armstrong & Bro. Co., Atlanta, Ga., distributor of used machinery and equipment, has established a department to handle new equipment and represents Acme Machinery Co., Cincinnati Milling Machine Co., Cincinnati Bickford Co., Cincinnati Planer Co. and the Lodge & Shipley Machine Tool Co.

* * *

Tarrant Foundry Co., 373 West Grand avenue, Chicago, has bought the plant and business of the Cummins Foundry Co., 1338 Cortland street consisting of a gray iron foundry and pattern shop, which it will continue to operate.

* * *

Penn Electrical & Mfg. Co., Irwin, Pa., manufacturer of switch and panel boards, has changed its firm style to the Penn Electrical Co., without change in other respects.

* * *

Kankakee Foundry Co., Kankakee, Ill., has been bought by F. A. Schneider, president of the Gartland-Haswell-Rentschler Co., Dayton, O. The plant is equipped to produce gray iron castings.

* * *

Midwest Steel Co., whose plant is at Bradford, Pa., will remove its general offices to Bradford from the Grand Central Terminal building in New York.

* * *

Shiloh Mfg. Co., Siebold building, Dayton, O., manufacturer of water softeners, has removed its plant from Shiloh Springs, O., to 314 East Fifth street, Dayton.

* * *

Gibbs Metal Container Co., Columbia, Pa., has changed its name to Metalcraft Corp. It will continue manufacture of metal screw caps for bottles and jars. It has absorbed the Perfection Shade Roller Co., Lancaster, Pa., manufacturer of an all-metal shade roller. The Lancaster plant will be removed to Columbia.

* * *

Goddard & Goddard Co. Inc., 4724 Hastings street, Detroit, has appointed H. F. Huncke & Co., 25 South Jefferson street, Chicago, its exclusive representative in that territory for its standard and special milling cutters.

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	9.00 to 10.00
Riff low phosphorus, 65 to 66 per cent	9.50 to 10.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.50 to 9.00
Algerian foundry and basic, 50 to 54 per cent	8.50 to 9.00

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.....nominal
Indian minimum 47 per cent.....nominal
Caucasian, 53 to 55 per cent.....
....Washed, 43 to 45 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$16.00
Washed gravel, imported duty paid eastern tidewater, per net ton	16.50 to 17.50

inquiring for two 1250-horsepower diesel engines as auxiliary units, bond issue of $275,000 being voted to pay for them.

MONROE, MICH.—Monroe Auto Equipment Mfg. Co., East First street, will build a 1-story plant 30x95 feet. General contract to J. H. Gratton.

MONROE, MICH.—Detroit Stoker Co., East First street, will build a 1-story pattern shop and storage building 60x80 feet. General contract to H. K. Ferguson Co., Cleveland.

ZEELAND, MICH.—Acme Stamping & Brass Works, Jacob Elmbass president, will build a plant at Holland, Mich., 90 x 126 feet for production of stampings, castings and forgings from nonferrous metals.

MANKATO, MINN.—Powell Motor Co., will build a 2-story, 88x157 garage. J. H. A. Brahtz, 601 Builders Exchange, St. Paul, is the architect.

MINNEAPOLIS, MINN.—Martin Mfg. Co., Oak Hill, St. Louis park, will rebuild its foundry and machine shop recently burned.

MINNEAPOLIS, MINN.—Electric Machinery Mfg. Co., 1331 Tyler street N. E., has awarded the contract for a steel tower and tank to the Chicago Bridge & Iron Co.

MINNEAPOLIS, MINN. — Cochran-Sargent Co., plumbing and heating fixtures, 2831 Lyndale avenue S., will build a 2-story, 100x150 warehouse and shop building.

MINNEAPOLIS, MINN.—Great Northern railroad has awarded general contract to E. G. Evensta Co., 714 Builders Exchange, for a 2-story, 100x288 garage and machine shop at Sixth street and Sixth avenue N.

MINNEAPOLIS, MINN.—The general contract for shop and warehouse buildings at 145 Tenth street N., for the Irvine Brass & Copper Co., has been awarded to C. W. Lundquist Co., 712 Fifteenth avenue N. E.

MINNEAPOLIS, MINN.—Alex A. Nelson, 4210 West Branson street, has received the general contract for remodeling and an addition to the factory and warehouse of the Northwestern Collapsible Carrier Co., Twenty-ninth street and Talmadge avenue S. E., 2-stories, 40x100. Percy E. Crozier, 915 New York Life building, is the architect.

OSAKIS, MINN.—The general contract for a 50,000-gallon steel water tank has been awarded to Theodore Jensen, Tracy, and the structural steel to the Minneapolis Steel & Machinery Co., 2854 Minnehaha avenue, Minneapolis.

VICKSBURG, MISS.—Lamb-Gary Mfg. Co. will build a plant for the manufacture of corrugated roofing and similar products and hardwood flooring, 75 x 250 feet and 50 x 200 feet, with a power plant 36 x 72 feet, for which equipment will be required.

KANSAS CITY, MO.—W. W. Brown Machine Works has leased building with 5000 square feet floor space at 125 Southwest boluevard for new plant.

KANSAS CITY, MO.—Columbian Steel Tank Co., A. A Kramer president, is building the first unit of its new plant at 1609 West Twelfth street. It is 130 x 225 feet and will be followed by other units.

KANSAS CITY, MO.—Kansas City Steel Corp., J. W. Dana president, 1016 Commerce building, will build a plant in the Blue Valley Industrinl district. Dan C. Hayne, chief engineer.

ST. LOUIS—Advance Brass Foundry Co., 1208 Cass avenue, has been incorporated with $12,000 capital by Louis C. Strotz and John J. Czarnecki.

ST. LOUIS—William Wurdack Electric Mfg. Co. has bought a site at Clayton and Newstead avenues where it will build a new plant.

ST. LOUIS—Southern Wheel Co., Pittsburgh, has bought 11 acres at Goodfellow avenue and Terminal railroad as site for a foundry. Company recently took over National Car Wheel Co.

ST. LOUIS.—Liberty Foundry Co., W. T. Mellow vice president, 5000 Thirty-eighth street, will build foundry additions, 1-story 90x160 feet and 2-story 30x90 feet. General contract to the Austin Co., 160 North LaSalle street, Chicago.

CAMDEN, N. J.—Acme Staple Co., 1643 Haddon avenue, will build a 2-story addition 87x145 feet.

HOBOKEN, N. J.—The Atlas Welding Co., will start work at once upon a 1-story addition.

MOUNTAIN LAKES, N. J.—Walcraft Products Inc. has been organized to manufacture duplicating machines and devices and has obtained a plant which will be equipped with metalworking machinery.

NEWARK, N. J.—Reo Motor Car Co., 520 Broad street, will add a machine shop and welding works at its service station at that address.

NEWARK, N. J.—R. & R. Foundry has been incorporated with $30,000 capital by Edgar L. Rankin, Richard J. Rasmuson and Roy Kennedy. Vanderbilt & Hedden, Newark, are attorneys.

BROOKLYN.—A $200,000 distributing plant will be erected by the Brooklyn Edison Co., Pearl and Mulberry street, on recently acquired property on Third avenue.

FULTON, N. Y.—Oswego Falls Corp., manufacturer of metal containers, is building a 1 and 2-story plant at Skaneateles, N. Y., 65 x 240 feet and 35 x 80 feet.

NEW YORK—Novo Valve Corp. has been incorporated with 1000 shares no par value by S. Poses, S. S. Lam and E. Pohoriles, 565 Fifth avenue.

NEW YORK—Roof Strainer Corp. has been incorporated to manufacture metal devices with $5000 capital by C. Tepper, G. Cooper and E. Goldman. Weissberger & Leichter, 93 Nassau street, are attorneys.

NEW YORK.—Charter Metal Products Co. has been incorporated with $25,000 capital to manufacture devices of metal by W. W. Wilson and M. Morse. J. J. Hegt, 126 Liberty street, is attorney.

NEW YORK.—Willis Iron Works has been incorporated with $5000 capital to operate an iron fabricating plant by H. Rosenfeld, E. Slessar and H. J. Wolcher. L. Muraskin, 110 West Fortieth street, is attorney.

NEW YORK—Banner Industrial Corp. has been incorporated with $10,000 capital to conduct an engineering business by G. C. Banner, F. McDermott, and D. Marks. E. A. Eichner, 1545 Broadway, is attorney.

NEW YORK—Metal Traders has been incorporated with $500,000 capital to refine metals by B. D. Blyth, H. M. Nicholson and H. P. Crossland. S. Ryan, Albany, is attorney.

NEW YORK—H. & D. Metal Novelties Co. has been incorporated with $5000 capital to manufacture metal devices by S. R. Levin, and H. R. Lindauer. D. D. Glantz, 233 Broadway, is attorney.

NEW YORK—Burnomore Utensil Corp. has been incorporated with 1000 shares of common no par value to manufacture hardware specialties, by C. N. Church, N. Murphy and K. Kaplan. H. S. Kaplan, 8 West Fortieth street, is attorney.

NEW YORK.—Instant Cross Link Corp. has been incorporated to manufacture automobile hardware with 200 shares common stock no par value by W. F. Fisher, P. Friedberg, and J. Siegel. Brodek & Raphael, 67 Wall street, are attorneys.

NEW YORK.—Slytege Co. has been incorporated with 100 shares of common stock

no par value to manufacture fringing machines by C. A. Springstead, A. E. Kilkenny and C. G. Hoffman. Rose & Paskus, 128 Broadway, are attorneys.

ONEONTA, N. Y.—Otsego Laundry Corp. is in the market for conveyors, transmission and power equipment for new plant replacing one recently burned.

POUGHKEEPSIE, N. Y.—Standard Gage Co., has been incorporated with $50,000 capital to manufacture tools by H. E. Aldeborgh, H. S. Thurston and W. Schickle. W. E. Hoysradt, Poughkeepsie, is attorney.

SNYDER, N. Y.—Rawstron-Kelley Corp., 110 Washington highway, has been incorporated with $125,000 capital to manufacture rotary motors, and will build a plant for their manufacture.

TROY, N. Y.—Universal Liquid Motor Co. has been incorporated with $25,000 capital to manufacture power machines by L. E. Claessens and F. P. Leonard. F. C. Claessens, Troy, is attorney.

AKRON, O.—Queen Washing Machine Co., O. L. Hall manager, 43 West Bowery street, is having sketches made for an addition.

AKRON, O.—Portage Iron & Wire Co., J. A. Bachman president, 1131 Johnston street, will build a 1-story addition 60x100 feet.

AKRON, O.—Akron Standard Mold Machine Co., Englewood avenue, is building a 1-story general machine shop as an addition to its plant.

ASHLAND, O.—F. E. Myers & Bro. Co., pump manufacturer, has started construction on its 5-story plant 68 x 176 feet, plans for which have been prepared by Lockwood, Greene & Co., Cleveland.

CLEVELAND—Morgan Brass Mfg. Co., 2104 Woodland avenue, William McNamara manager, will build a plant 100 x 200 feet.

CLEVELAND.—Scully Pattern & Mfg. Co. has been incorporated with $25,000 capital to operate a foundry and machine shop for the manufacture of castings and machinery by John P. Moran, Viola J. Borth, M. Breen, George W. Austin and Harry M. Breen. J. P. Moran, 308 Euclid avenue, is attorney.

CLEVELAND.—Perfection Shock Absorber Co. has been incorporated with $500 capital to manufacture automotive parts and accessories by Lex Kinter, A. W. Bell, H. H. Rich, Ralph Blue and H. G. Burnham. Lex Kinter, Society for Savings building, Cleveland, is attorney.

TOLEDO, O.—Dina Tool Co., H. G. Buggie president, has bought a site and will build a plant to manufacture automobile equipment.

TULSA, OKLA.—C. F. Camp Co., 14 East Seventh street, has been incorporated with $75,000 capital to manufacture oil well equipment and drilling engines.

BETHLEHEM, PA.—Central Railroad of New Jersey, 143 Liberty street, New York, has filed plans for its car and locomotive repair shops here, budgeted to cost $2,450,000.

BLAIRSVILLE, PA. — Conemaugh Iron Works, M. W. Saxman, manager, Latrobe, Pa., is having plans made for rebuilding its burned foundry, 1-story 130x312 feet.

CHESTER, PA.—Delaware County Motor Parts Co. has been incorporated with $10,000 capital to manufacture machinery and motor vehicle parts by Anthony J. Miller, 18 West Eighth street, Chris H. Royer, 120 West Mowry street and Edward D. McLaughlin, 126 East Eighteenth street.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 46.00
Pennsylvania, No. 2	35.00 to 40.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	38.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	41.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00

SILICA BRICK

Pennsylvania	40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00 to 48.00

PHILADELPHIA.—The Turner Machine Co., 917-23 West Schiller street, has awarded general contract for a $16,000 machine shop to John G. Fotheringham, 1000 Arrott street.

PHILADELPHIA.—General contract for a $75,000 manufacturing building, for the Heintz Mfg. Co., Front & Alney streets, has been awarded to the Barclay White Co., 1718 Sanmon street. (Noted Oct. 22).

PHILADELPHIA.—Contract for a $45,000 manufacturing building for Samuel Cohen & Co., Eighth street and Girad avenue, has been awarded to S. H. Levin, 1631 South Fifth street.

PHILADELPHIA.—M. Tucker & Co. has been incorporated with $125,000 capital to manufacture tools, dies, machinery, castings and screw machine products by Morton Tucker and Gladys Tucker, 1120 North Sixty-fifth street and Raymond A. White Jr., 818 Asbury Terrace.

PITTSBURGH.—Clinton Iron & Steel Co., West Carson street, is building a slag crushing plant.

PITTSBURGH—Rosedale Foundry Co., Northside, suffered loss by fire which destroyed part of its plant.

PITTSBURGH.—Pittsburgh Crucible Steel Co., Oliver building, will build a 1-story addition to its plant at Smallman and Thirty-first street. H. J. Woods is company engineer.

READING, PA.—Reading Knob Works Inc., manufacturer of builders' hardware, is building an addition to accommodate the plant of the Huber Mfg. Co., 417 East Ninety-third street, New York, which it recently bought and will remove to Reading.

WILKES-BARRE, PA.—Gates Foundry Co., 71 Parrish street, gray iron castings, is building a 1-story addition 54 x 100 feet. Thomas Podmore, Bennett building, is architect.

BROOKINGS, S. D.—Maytag Washing Machine Co. will build a 84x213 fireproof factory. Henry Raeder, 20 West Jackson street, Chicago, is architect.

CHATTANOOGA, TENN.—Tennessee Hoist Corp. has been incorporated with $25,000 capital to manufacture machinery by O. B. Gladish and J. B. Roberts, Volunteer Life building.

CHATTANOOGA, TENN.—McGregor Mfg. Co. has been incorporated with $20,000 capital to manufacture hardware by J. B. Roberts and John E. Gilbreath, Volunteer Life building.

KNOXVILLE, TENN.—Strachan Tube Mill Co. has been incorporated with $10,000 capital by Charles B. Strachan and A. L. Mason.

WICHITA FALLS, TEX.—Ray Sheet Metal Works, F. A. Ray president, has bought site and has plans for plant for manufacture of heavy steel products.

NORFOLK, VA.—Lamkin Weatherstrip & Screen Corp. has been incorporated by Clyde E. Lambkin and Katie L. Jones.

SEATTLE, WASH.—Hieb Bros. Inc., has been incorporated with $25,000 capital to manufacture machinery by Jacob, John and Peter Hieb.

CHARLESTON, W. VA.—Kelly Ax & Tool Co. is planning construction of a shipping terminal which will require elevating, conveying and crane equipment.

PARKERSBURG, W. VA.—Penn Metal Co., A. V. Spinosa, vice president, has let a contract to the Plate Construction Co., Parkersburg, for a plant to manufacture metal lath and fireproofing materials and later will add a department to produce sheet metal products.

JANESVILLE, WIS.—Parker Fountain Pen Co., George S. Parker president, will build a 6-story addition 45x142 feet.

LA CROSSE, WIS.—Trabe Co., Second and Cameron street, is building a 1-story addition 80 x 115 feet for the manufacture of heating specialties.

LOYAL, WIS.—Lomira Canning Co., has awarded general contract to Axel Helms, for a canning factory.

MANITOWOC, WIS.—The Aluminum Specialty Co., South Seventeenth and Wollmer streets, let the general contract to the Schuette Construction Co., 826 South Eighth street for the erection of a factory addition, 80x120 feet. W. E. Spindler is president.

MARSHFIELD, WIS.—L. F. Diddie, manufacturer of lightning rods and other metal farm specialties, has placed contracts for the erection of a 2-story factory addition, 44x80 feet.

MILWAUKEE.—Federal Rubber Co., Cudahy, will add three stories 120x141 feet to one of its buildings, for which equipment will be required. George J. Mead is chief engineer at Cudahy.

MILWAUKEE.—The Hi-Way Service Corp. has been incorporated by E. A. Drott, Royden E. Webster and others to manufacture and deal in machinery, appliances and devices for concrete highway construction. The capital stock is $25,000.

MILWAUKEE. — Architects Rosman & Wierdsma, 490 Broadway, are making plans for a 3-story brick and concrete garage and service building, 100x120 feet, costing about $175,000, at Jackson and Oneida streets. The builder is Arthur J. Straus, 230 Grand avenue, but the name of the tenant is not divulged.

MILWAUKEE.—Articles of incorporation have been filed by the Adrian Corp., Milwaukee, capital stock $25,000, to manufacture and deal in electric therapeutical apparatus, X-ray machines and the like. The incor-

porators are Matthew B. Adrian, Albert E. Preussler and Edgar A. Bark.

RICE LAKE, WIS.—Oscar H. Jensen, city clerk, is taking bids on a deep well turbine and booster pump, including piping and control apparatus, for a water works improvement project costing about $25,000.

WEST ALLIS, WIS.—A 1-story addition, 45x152 feet, will be erected on the garage and repair shop of William Rosenthal, 8430 Summit avenue. With equipment the work will cost about $20,000.

Business in Canada

WINNIPEG, MAN.—The electrification of the waterpower plant here at a cost of $60,000 is proposed by the city council. Clerk, C. J. Brown.

WINNIPEG, MAN.—Tenders addressed to chairman of the committee on public utilities, here, will be received at the office of Clerk C. J. Brown, until Nov. 9, for two three-phase generators of 6500 k. v. a. capacity each, and two units of horizontal shaft turbines and governors for controlling same for Point du Bois plant.

FORT WILLIAM, ONT.—Barnett-McQueen, Ltd., 207 Cuthbertson Block, has the general contract for drier and millwright shops here to cost $25,000 for the Northland Elevator Co.

GRANTHAM TOWNSHIP, ONT.—The council proposes to start work at an early date on construction of waterworks plant. Clerk, L. S. Bessey, St. Catherines, Ont.

GROUNDRAU, ONT.—The Groundrau Mines, Ltd., Mr. Leslie, manager, will build a hardinge ball mill here.

HAMILTON, ONT.—The B. Greening Wire Co., has entered into an agreement with the Hoff Metal Products Co., New York, to manufacture and distribute the Hoff automobile chain in Canada and the British Empire. Production will not involve an additional building, but some $75,000 equipment is being installed.

MOUNT FOREST, ONT.—Ernst Bros. will build addition to their machine shop here and will require tools and equipment.

PORT FRANCES, ONT.—Preliminary construction work here for a mill for the Backus-Brooks interests, has been started and will be carried on through the winter.

SWANSEA, ONT.—The Steel Co. of Canada, Ltd., Hamilton, Ont., has started work on an addition to its plant here.

TORONTO, ONT.—The Coleman Lamp Co., Queen and Davies streets, has let the contract to R. G. Kirby, 539 Yonge street, for an addition to its plant here.

WATERTOWN, ONT.—Town plans to build addition to waterworks plant here to cost $30,000. Clerk, J. C. Medlar.

WINDSOR, ONT.—The L. A. Young Industries, Ltd., McDougall avenue, are having plans prepared by Pennington & Boyde, Bartlett Block, for a manufacturing plant here.

CHELSEA, QUE.—Initial construction work in connection with a large newsprint mill and power plant here to cost $6,000,000 is expected to be started immediately by the International Paper Co. Plans show initial provision for installation of two power units capable of developing 24,000 horsepower.

ST. DONAT, QUE.—La Cie de Veneer de St. Donat, Ltd., proposes to build a factory here and is in the market for a steam engine, heating plant, veneer machine for cutting wood, woodworking equipment, etc.

THURSO, QUE.—The Singer Mfg. Co. has started work on a woodworking factory and sawmill here.

New Trade Publications

CRANES—Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., has issued a bulletin showing uses of a single I-beam crane manufactured by the company.

OIL PUMPS—Pumps for service on oil pipe lines and in refineries where conditions are exacting are shown in a bulletin by the Goulds Mfg. Co., Seneca Falls, N. Y.

CO_2 RECORDERS—Bulletins have been issued by the Uehling Instrument Co., Paterson, N. J., describing its CO_2 recorder and indicator and the principles of its operation.

SHEARS—Gate and squaring shears and combination shear and punch are fully illustrated and described in bulletins being issued by the Long & Alstatter Co., Hamilton, O. Capacities and various data are shown.

PORTABLE ELEVATORS.—Two decades of use of its elevating machinery is sketched in a bulletin by the Revolvator Co., Jersey City, N. J., filled with illustrations of the varied uses to which they have been put.

ROTARY POSITIVE BLOWERS.—A special type of blower for raw water ice systems is described in a bulletin by the Connersville Blower Co., Connersville, Ind. In addition to illustrations of various types for this use a table of specifications is given.

CONVEYORS.—With special emphasis on the principle of the descending spiral the Standard Conveyor Co., North St. Paul, Minn., has issued a bulletin illustrating the use of its various types of automatic conveyors in a number of uses.

MOTORS—Ball and roller bearing motors manufactured by the Reliance Electric & Engineering Co., Cleveland, are described in a 15-page booklet. Open and closed motors are shown with description of each. Tables show various sizes and dimensions and illustrations show some installations.

SWITCH CONDULETS — Tumbler switch condulets are featured in a bulletin published by the Crouse-Hinds Co., Syracuse, N. Y. Two types of switches are shown, one being a guarded type in which the switch handle is protected by a rim and the other type is water tight with an external, indicating handle.

STOKERS — American Engineering Co., Philadelphia, has issued a new catalog on stokers, with much new matter, including a section on the use of preheated air, for which a new type of stoker has been designed and a description of the distributing ram system. Illustrations show various installations of these stokers.

FLOW METERS — Mechanically operated flow meters for measuring the flow of fluids and gases through pipes, as developed by the General Electric Co., Schenectady, N. Y., are given full description and explanation in a bulletin just published. These meters indicate, record and register the flow, pressure and temperature of the gas or fluid.

DIESEL ENGINES.—A bulletin by the Anderson Engine & Foundry Co., Anderson, Ind., is being sent out, describing a type of diesel engine just added to its line. It is heavier than previous models by this company, the crank shafts are larger and bearing surfaces longer. The engine has been simplified and the design refined.

STEEL FLANGED FITTINGS.—An unusual test applied to a fitting manufactured by the Walworth Co., Boston, is described in a bulletin by that company. After hydrostatic test the fitting was placed between two lengths of flanged pipe and the whole supported between centers 18 feet apart and a load of 7428 pounds was lowered over the fitting until its was pressed to the floor. Results of the test are described.

CRUCIBLES—Plumbago Crucible Manufacturers' Publicity bureau, 90 West street, New York, has issued a booklet intended to show users how crucible costs may be cut. Suggestions are made as to how crucibles may be stored, handled and used to give minimum breakage and maximum service. Data are given on melting points, composition of alloys, tensile strengths and standard crucible sizes.

CIRCUIT BREAKERS — Carbon circuit breakers designed especially for 250-volt industrial applications where a compact breaker is required are described in a booklet by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. It contains a detailed and fully illustrated description of the device, points out the functions of the breaker contacts and outlines the characteristic of effective shock absorption and other factors.

DRILLS AND REAMERS.—Half a dozen leaflets and booklets have been prepared by the Morse Twist Drill & Machine Co., New Bedford, Mass., covering several lines of tools, including drills, reamers, countersinks, bits and others. Another recent publication by this company is a machinist's practical guide, containing information and statistical tables of standards, gages and other information.

ALLOY STEELS—Concentric celluloid disks employing a modified circular slide rule principle have been designed by the Central Steel Co., Massillon, O., for distribution to users of alloy steels. Through windows the analysis of various S. A. E. and U. M. A. alloy series may be read, with an index to proper heat treatment which is read in detail through another window on the reverse side.

TAPS AND DIES.—A new edition of its small tool catalog has been issued by the Greenfield Tap & Die Corp., Greenfield, Mass., and is being distributed to the trade. Ground thread taps and spiral fluted staybolt taps are listed in this edition and the company's complete line of gages is listed for the first time, as well as its bolt and pipe threading machines. A new method of packing screw plates for domestic trade is described.

Sheet Extras and Differentials

Black Sheets

Gage Differentials

Gage	Price per 100 pounds
30 Add	$0.20
29 Add	0.10
28 (Carload quantities)	Base
27 Deduct	0.05
25-26 Deduct	0.10
22-24 Deduct	0.15
17-21 Deduct	0.20
15-16 Deduct	0.25
13-14 Deduct	0.30
10-12 Deduct	0.35

BLACK EXTRAS FOR WIDTH

Gages	Under 12 inches to 6 inches	Under 24 inches to 12 inches	24 inches to 32 inches	Over 32 inches to 36 inches	Over36 inches to 40 inches	Over 40 inches to 44 inches	Over 44 inches to 48 inches
10 to 16	0.20	0.10	Base	Base	Base	Base	Base
17 to 18	0.25	0.15	Base	Base	0.05	0.05	0.05
19 to 21	0.25	0.15	Base	Base	0.15	0.15	0.25
22 to 24	0.25	0.15	Base	Base	0.20	0.40	0.40
25 to 27	0.30	0.20	Base	Base	0.20	0.40	...
28	0.30	0.20	Base	0.10	0.40	...	...
29 to 30	0.30	0.20	Base	0.10	...	...	...

BLACK EXTRAS FOR LENGTH

Gages	Under 30 inches to 18 inches	Under 60 inches to 30 inches	60 inches to 124 inches	Over 124 inches to 144 inches
10 to 16	0.15	0.10	Base	Base
17 to 18	0.25	0.15	Base	0.10
19 to 21	0.25	0.15	Base	0.10
22 to 24	0.25	0.15	Base	0.10
25 to 30	0.30	0.20	Base	0.10

Galvanized Sheets

Gage Differentials

Gage	Price per 100 pounds
30 Add	$0.50
29 Add	0.25
28 (Carload quantities)	Base
27 Deduct	0.15
25-26 Deduct	0.30
22-24 Deduct	0.45
17-21 Deduct	0.60
15-16 Deduct	0.75
12-14 Deduct	0.90
10-11 Deduct	1.00

GALVANIZED EXTRAS FOR WIDTH

Gages	Under12 inches to 6 inches	Under 24 inches to 12 inches	24 inches to 32 inches	Over 32 inches to 36 inches	Over 36 inches to 40 inches	Over 40 inches to 42 inches	Over 44 inches to 44 inches	Over 48 inches to 52 inches	Over 52 inches to 54 inches
10 to 15	0.25	0.20	Base	Base	Base	0.10	0.20	0.30	0.40
16	0.25	0.20	Base	Base	0.10	0.10	0.20	0.35	0.50
17 to 17	0.30	0.20	Base	Base	0.10	0.10	0.20	0.35	0.50
19 to 21	0.30	0.20	Base	Base	0.20	0.30	0.40	0.50	0.75
22 to 24	0.30	0.20	Base	Base	0.20	0.40	0.60	...	...
25 to 26	0.35	0.25	Base	Base	0.30	0.60	...	...	...
27	0.35	0.25	Base	0.10	0.50	0.75	...	...	...
28	0.35	0.25	Base	0.20	0.60	...	...	...	...
29 to 30	0.35	0.25	Base	0.20	...	...	...	...	...

GALVANIZED EXTRAS FOR LENGTHS

Gages	Under 30 inches to 18 inches	Under 60 inches to 30 inches	inches 60 to 124 inches	Over 124 inches to 144 inches	Over 144 inches to 168 inches	Over 168 inches to 180 inches	Over 180 inches to 192 inches	Over 192 inches to 216 inches	Over 216 inches to 228 inches
10 to 12	0.20	0.10	Base	Base	0.50	0.60	0.60	0.75	1.00
13 to 14	0.20	0.10	Base	Base	0.50	0.75	0.75	1.00	1.50
15 to 16	0.20	0.10	Base	Base	0.50	0.75	...	...	...
17 to 24	0.30	0.20	Base	0.10	...	...	...	...	...
25 to 30	0.35	0.25	Base	0.10	...	...	...	...	...

Blue Annealed Sheets

GAGE DIFFERENTIALS

Gage	Price per 100 pounds
8 and heavier	Less $0.05
9 and 10, carload quantities	Base
11 and 12	0.05
13 and 14	0.10
15 and 16	0.20

EXTRAS FOR WIDTH

Gage	Extra per 100 pounds
16 and heavier under 24 to 12-inch	$0.10
16 and heavier under 12 to 6-inch	0.15
16 and heavier under 24-inch and wider	None

EXTRAS FOR LENGTH

Gage	Extra per 100 pounds
16 and heavier, 60-inch and longer	None
16 and heavier, under 60 to 30-inch	0.10
16 and heavier, under 30 to 18-inch	0.15
Deoxidizing	0.15
Extra deep stamping or drawing	0.50

STANDARD MISCELLANEOUS EXTRAS

	Extra per 100 pounds
Blued range steel	$0.70
Blued range steel patent leveled	0.95
Blued stove pipe stock, 25 gage and lighter	0.20
Blued stove pipe stock, 24 gage and heavier	0.50
Enameling stock, pickled and annealed finish	0.50
Deep stamping or drawing	0.25
Extra deep stamping or drawing	0.50
Extra box anneal	0.15
Full cold rolled and reannealed	0.25
Full pickled, full cold rolled and reannealed	0.75
Lime finish	0.10
Long ternes, special finish	0.75
Oiling	0.10
Patent or stretcher leveling	0.25
Pickled, annealed, cold rolled and reannealed for tinning	0.50
Resquaring, 5% of price of sheet at time of resquaring.	
Roller leveling	0.10
Single pickled	0.45
Single pickled, cold rolled and reannealed	0.50
Single pickled, oiled or lime finish	0.55
Carbons over 0.25 to 0.40 per cent	0.10
Carbons over 0.40 to 0.60 per cent	0.25
Carbons over 0.60 to 0.90 per cent	0.40
First grade metal furniture stock, full pickled, full cold rolled, reannealed, stretcher leveled, not resquared	1.00
Second grade metal furniture stock, single pickled, full cold rolled reannealed, stretcher leveled, not resquared	0.85

Automobile Sheets

	Primes with seconds up to 15% per 100 lbs.
Automobile body stock	Base, 22 gage
Auto body stock, deep stamping	0.25
Auto body stock, extra deep stamping	0.50
Hood, flat fender, door and apron, or splash guard stock	0.25
Crown fender, cowl and radiator casing, deep stamping	0.50
Crown fender, cowl and radiator casing, extra deep stamping	0.75

Price of seconds, 10 per cent less than the invoice price for corresponding primes.

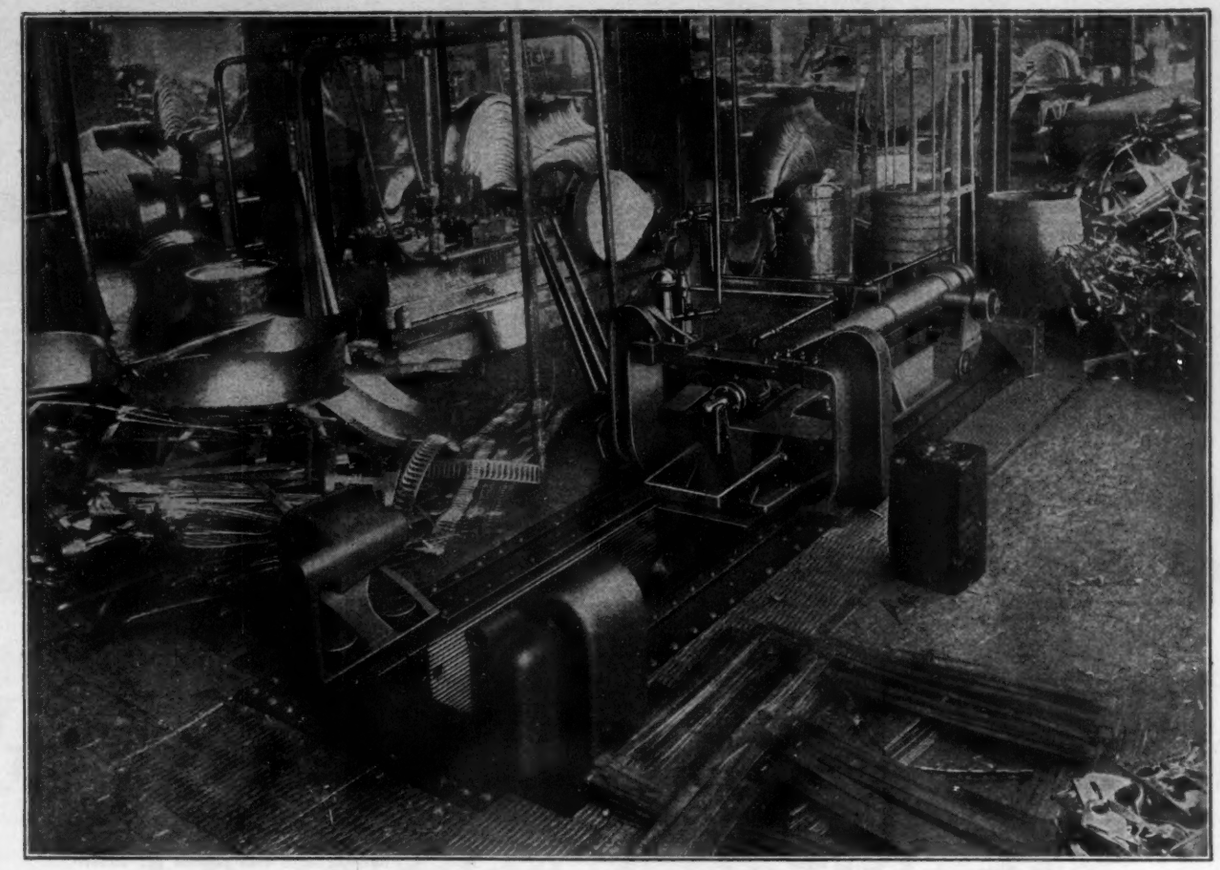
EXTRAS FOR EXTREME WIDTHS

	Per 100 lbs.
10-16 gage over 36 inches to 44 inches	0.10
10-16 gage over 44 inches to 48 inches	0.35
10-16 gage over 48 inches to 52 inches	0.50
17-18 gage over 36 inches to 44 inches	0.10
17-18 gage over 44 to 48 inches	0.20 to 0.35
17-18 gage over 48 inches to 52 inches	0.60
18 gage and heavier under 24 to 12 inches	0.15
18 gage and heavier under 12 to 6 inches	0.25
19 gage and lighter under 24 to 12 inches	0.15
19 gage and lighter under 12 to 6 inches	0.25
19-21 gage over 36 inches to 44 inches	0.30
19-21 gage over 44 inches to 48 inches	0.50
22-24 gage over 36 inches to 40 inches	0.40
22-24 gage over 40 inches to 44 inches	0.80

Black sheet extras to apply on narrow widths.

EXTRAS FOR LENGTHS

	Price per 100 pounds
16 gage and heavier over 60 inches to 144 inches	Base
16 gage and heavier under 60 inches to 30 inches	$0.10
16 gage and heavier under 30 inches to 18 inches	0.15
17 to 24 gage over 24 inches to 144 inches	0.10
17 to 24 gage under 60 inches to 30 inches	0.15
17 to 24 gage under 30 inches to 18 inches	0.25
25 gage and lighter over 24 inches to 144 inches	0.10
25 gage and lighter under 60 inches to 30 inches	0.20
25 gage and lighter under 30 inches to 18 inches	0.30



Typical Installation in Well-Known Automobile Plant

WHY SHEET-SCRAP CAN BE PROFITABLY COMPRESSED

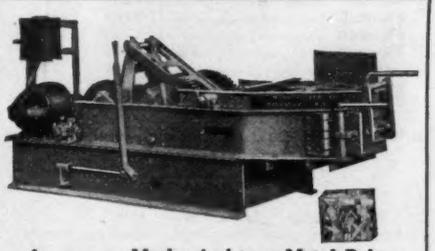
It commands at all times the best price;
It can be more conveniently stored;
It can be more economically handled;
It can be readily held for favorable markets;
It practically eliminates corrosion;
It permits of loading cars to capacity;
It saves much heat in remelting.

LOGEMANN SCRAP-METAL PRESSES

Hydraulic and Mechanical Types

LOGEMANN BROTHERS COMPANY
3126 Burleigh St. Milwaukee, Wis.

Also presses making crucible-size bricks of copper, brass, aluminum and other metals.



Logemann Mechanical-type Metal Baler

Please indicate character of scrap, quantity and heaviest gauge, when writing.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	12½
¾ to 1¼-inch	45	25½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	33	25½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

THREADS AND COUPLINGS

Butt Weld

⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾ to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

⅛ and ¼-inch	+19	+54
⅜-inch	21	7
½-inch	28	12
¾ to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
½-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

Pittsburgh less carload discounts, 4 points larger	Carload
STEEL (Lap Welded)	
2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
4¼ to 3¾-inch	38½ off
4 to 13-inch	42 off
CHARCOAL IRON	
1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5
SEAMLESS COLD DRAWN	
1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off
SEAMLESS HOT ROLLED	
2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent..... 55 off

Carbon, 0.30 to 0.40 per cent..... 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per Pound for Width or Diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼ inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept., or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH or DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c